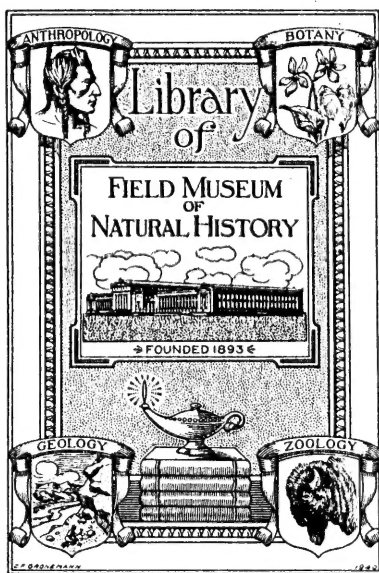
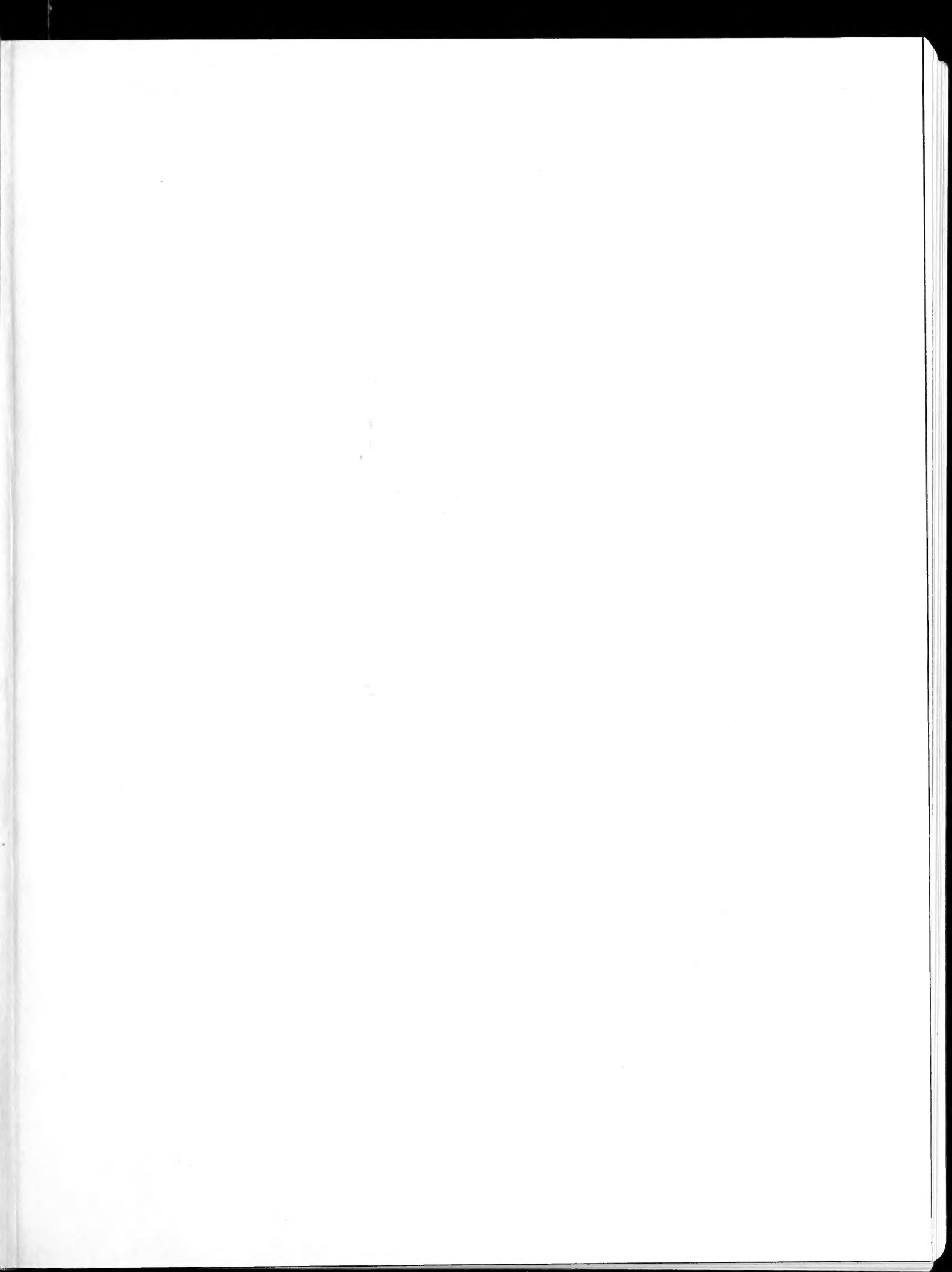


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AMERICAN CONCHOLOGIST

QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 20, NO. 1

MARCH 1992



In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices as well as advanced collectors, scientists and shell dealers from around the country and the world.

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MEMBERSHIP

Memberships are for the calendar year, January through December. Late memberships shall be retroactive to January. **DUES:** (per year) INDIVIDUAL (USA, Canada, Mexico) \$12.50; FAMILY & CLUB/ORGANIZATION (USA, Canada, Mexico) \$15.00; CARIBBEAN, CENTRAL & SOUTH AMERICA (via Airmail) \$20.00; COUNTRIES OUTSIDE THE AMERICAS (Via Airmail) \$25.00. Make checks payable to CONCHOLOGISTS OF AMERICA. Please pay in US dollars with a check that has Transit Enrouting and Account Numbers printed at the bottom of check, or a money order and send to Bobbie Houchin. **RENEWALS** are sent to the TREASURER, Walter Sage. **BACK ISSUES** are available from Mrs. Houchin as follows: prior to 1985- \$1.50 each; 1985 to current - \$3.00 each.

COVER: *Primovula rosewateri* (Cate, 1973). A 10mm specimen photographed by Carol Buchanan in December 1987 at Southwest Solitary Island, New South Wales, Australia.

NEW CONSTITUTION AND BY-LAWS DRAFT ENCLOSED

Please Read Enclosed Carefully
Return Ballot by May 15, 1992.

AMERICAN CONCHOLOGIST DOES NOT PUBLISH NEW
SPECIES DESCRIPTIONS OR TYPE DESIGNATIONS

PRESIDENT'S MESSAGE

I believe it was Lynn Nathanson, Long Island Shell Club, who said, "A shell club's newsletter is the glue that holds the club together." Some shell clubs do not have a regular newsletter; if your club is one of them, I urge you to get a newsletter and see for yourself. In a similar manner it would be difficult for the COA to exist without its magazine, **American Conchologist** (A. C.), which leads me to its editor, Lynn Scheu, and the main part of my brief message.

Since Lynn is the editor, she cannot toot her own horn here. Lynn is a dynamo, but even a dynamo can, at times, become overloaded, as she often is, and I'll tell you why. Richard Goldberg listed a number of the editor's duties a few years ago, but they have grown, and there are many more we can't anticipate. Lynn does have a volunteer staff and a talented, tolerant and hard working husband, Richard.

Lynn produces the best magazine on conchology and shell news you can find anywhere. The A.C. is published four times a year, and usually two of these issues are in color (more time and more expense required) and all four are 28 pages long. She solicits and edits articles and pictures of interest for the varied tastes of COA members. Editing articles and the A.C. means many jobs: proof-reading, correcting, condensing, locating, spacing, sizing photographs, designing layouts, shopping for software and studying and operating a computer. She must search for and train a reliable and capable local printer to produce pages and envelopes to the correct format. She has to correspond with and return photos to authors, and manage a magazine exchange program. Advertisements must be made to the correct format and incorporated. It is necessary for her to deal with the post office in obtaining a bulk rate postal permit to mail within the U.S., and using different postage rates for overseas mail. Lynn must see that correct mailing labels are made and applied, and that envelopes are stuffed and sealed and mailed.

The logistics of handling 1500 magazines, taking delivery on them, carrying them up and down stairs, putting them in mail bags in zip code order for mailing, and loading and unloading them at each end is enough to challenge a weight lifter.

The tasks of a different nature that are taxing are chasing down articles, correcting printing errors through a series of proofs, making last minute changes, copying back issues (along with Bobbie Houchin), for people who request them from her, and answering the many letters she receives requesting information, which she supplies or passes along to another COA official to answer.

The above does not cover the interfacing with her staff, with the COA Board and with others in setting policies and, in general, brainstorming. Strangely enough, being the editor is a non-paying volunteer position. However, there are ways we may help. The Board took one major step last year in providing a more workable and less aggravating computer for her work. We can all help by supplying suitable articles and by being patient if an issue is late.

The General Board of Directors of COA held its mid-year meeting in the homes of Lynn and Richard Scheu and COA Membership Chairman Bobbie Houchin in Louisville, Kentucky, during the January 10-12 weekend. You will read individual reports of some actions taken, and other events will unfold or be revealed as time and space permit. One of the significant actions of this Board was the completion of a revised and simplified Constitution and a set of Bylaws (C&B's). This was made possible by the prior excellent work of Doris Underwood, Vice-President, Linda Koestel, Trustee, and John Baker. A copy of the C&B's and a voting form are enclosed with your A.C. You are urged to study the new C&B's and return your vote quickly.

Sincerely,
Glen Deuel, President

The Ed. thanks the silver-tongued Glen Deuel for his profuse compliments! She didn't know her horn was so worth tooting! But she's glad to be appreciated. Especially in this late issue.

COA TO PRODUCE 20 YEAR INDEX

You say you've just bought a beautiful, unnamed new 6" abalone from the Carribbean. You're absolutely certain that Dr. Ed Petuch has already put a name to it and simply KNOW you've seen a picture of it in an old **American Conchologist**. But what name? And when? How can you find out? Or perhaps you're working on your beach-collected exhibit for the Sandy Shores Semiannual Shellebrity Shell Show, and are certain it's a shoo-in for the COA Trophy. You want to give it the catchy title, "Shellabrating Sandy Shores Sea Shells," but are afraid someone else has already won the Trophy with an exhibit of that name. How can you check? Or maybe you've gotten interested in landshells of Antarctica and want to buy a book to assist you. You are sure several have been reviewed in the **American Conchologist**, but can't remember when. Must you page through every single issue in that pile to find out? Sorry, subscribers! Today you just have to sit down and hunt.

But tomorrow, or rather in July, there'll be a complete index to all twenty years of the **COA Bulletin/American Conchologist**. This long-awaited publication will have sections on fossils and landshells, on book reviews and trophy winners, on people, places and things. It'll lead you right to that article you can't find, or to that face you can't place. Browse in it and you're sure to find dozens of articles and topics you missed and want to read. Back issues will beckon you, unread articles will tease your curiosity. And your collection of magazines will become a much more valuable reference than it already is.

Order your very own copy of this incipient best-seller, written by COA member Winston Barney, produced and directed by Richard Goldberg and Lynn Scheu. Stand up and be counted — reserve your copy today! Write to Richard Goldberg, P.O. Box 137, Fresh Meadows, NY 11365 immediately, or certainly before May 31, 1992. We hope to have it ready for delivery by convention time.

The index will cost \$4.00, postage paid (\$5.00 Western Hemisphere, \$6.00 overseas). This is a whopping great undertaking, on a very limited budget, so please assist us in the project by sending your order and your \$4.00 (or \$5.00 or \$6.00) check made out to "CONCHOLOGISTS OF AMERICA" at your earliest convenience. Foreign payments must be in U. S. dollars and checks must have Transit Enrouting and Account Numbers printed at bottom. Only by advance orders can we keep to budget and give you the lowest possible cost. Profit, if any, from index sales will go toward advance funding for the next COA Special Publications project. Losses will accrue to our collective disgrace.

TO WHET YOUR APPETITE FOR THE INDEX AND TO INCREASE THE WORKLOAD OF THE BACK ISSUES DEPARTMENT, OUR COA TREASURER AND IN-HOUSE BIBLIOGRAPHER, WALTER SAGE, HAS UPDATED A LIST OF ARTICLES IN BACK ISSUES FROM 1979 THROUGH SEPTEMBER 1986 THAT RICH GOLDBERG COMPILED. WE PUBLISH THE ENTIRE LIST BELOW:

COA BULLETIN/AMERICAN CONCHOLOGIST BACK ISSUES

by Richard Goldberg and Walter Sage

- | | |
|---|--|
| Issue #16 (1979) — Speaking of Shells/ <i>Murex loebbecki</i>
Collecting Mollusks for the Aquaria | Vol. 11 #4 (1983) — California Seashells Part VI: <i>Maxwellia</i> [Muricidae] |
| Issue #17 (1979) — A Trio of Textiles/ <i>Conus euetrios</i> , <i>eumitus</i> & <i>elisae</i>
New Zealand Tonnidae | Vol. 12 #1 (1984) — California Seashells Part VI: Coralliophilidae
Tiny Philippine Favartias
A Few More Words About <i>Cymbiola marispuma</i>
Kwajalein's Coral Pinnacles
Shells for the Amateur |
| Issue #18 (1979) — Speaking of Shells/ <i>Pterynotus miyokoae</i>
A Dredging Trip to Barbados, West Indies | Vol. 12 #2 (1984) — The Genus <i>Cerion</i> , an Unusual Group of W. I. Land Shells
New Philippine Cones
Tampa Bay Shells
Queen of the Caribbean [<i>Strombus gigas</i>] |
| Issue #19 (1980) — Another Rare Cypraea for the Philippines
Behind the Discovery of the Second <i>Cypraea thomasi</i> .
In Search of New Zealand's Subtropical Shells | Vol. 12 #3 (1984) — Philippine <i>Pterynotus</i> [Muricidae]
Two Remarkably Keeled Land Shells
Latiaxis Look-Alikes |
| Issue #20 (1980) — Western Atlantic <i>Pterynotus</i>
Freak Land Shells
Don't Underestimate the Tourist Spots/Sand Key | Vol. 12 #4 (1984) — Remarks on the Systematics of the Genus <i>Homalocantha</i>
<i>Homalocantha</i> [Muricidae] — A Pictorial Addendum
California Seashells Part VII: Mitridae |
| Issue #21 (1980) — New West Panama Ovulid
Shelling Notes from the Florida Keys
Two Records for the Keys/ <i>Mitra florida</i> and <i>Leucozonia nassa</i> | Vol. 13 #1 (1985) — California Seashells Part VIII: Bursidae
Florida Fossils Part II
A Sinistral <i>Strophocheilus</i> [land shells]
Philippine <i>Latiaxis</i> |
| Issue #22 (1980) — The <i>Conus moluccensis</i> Complex
Deepwater Philippine Shells/Miters and Turrids
Shelling the Southwest Coast of Taiwan | Vol. 13 #2 (1985) — California Seashells Part IX: <i>Pecten</i> , <i>Hinnites</i> , <i>Chama</i>
Those Amazing Mactan Muricids
On the Differences Between 3 Related <i>Homalocantha</i> sp.
Illustrations and Comments on <i>Typhina yatesi</i> |
| Issue #23 (1981) — More on the <i>Conus moluccensis</i> Complex
A Rare Mexican <i>Colubraria</i>
Cypin' in the Florida Keys | Vol. 13 #3 (1985) — California Seashells Part X: Cancellariidae
Diving for <i>Conus crocatus</i>
<i>Strombus taurus</i> — the Marshallse Bull Conch
Illustrations and Comments on <i>Typhina yatesi</i> |
| Issue #24 (1981) — Those Fabulous <i>Festilyria</i>
the Marginellas of Southeast Asia
Micro Marginellas from Florida and the Caribbean
Shelling in the Turks and Caicos. | Vol. 13 #4 (1985) — A Classification and Catalog of Living World Ranellidae (= Cymatiidae) and Bursidae
Notes on <i>Coralliophila abbreviata</i> and <i>galea</i> |
| Issue #25 (1981) — Speaking of Shells/ <i>Cypraea porteri</i>
Newly Named <i>Nassarius/N. troendleorum</i>
Further Comments of the <i>Conus moluccensis</i> Species Group | Vol. 14 #1 (1986) — California Seashells Part XI: Triviidae
Comments on <i>Murex cuspidatus</i>
Observations on (<i>Favartia</i>) <i>paulboschi</i>
On the Generic Placement of <i>Muricopsis oliverae</i> |
| Issue #26 (1982) — Distributional Range of <i>Cypraea parthenopeum</i>
Eleuthera. . . Several Times | Vol. 14 #2 (1986) — California Seashells Part XII: <i>Cypraea</i>
(color issue)
The Short Happy Life of <i>Vitularia linguabison</i>
Remarks on <i>Pterynotus</i> (<i>Marchia</i>) <i>tripterus</i>
Thailand's Phuket Island |
| Vol. 10 #3 (1982) — California Seashells Part I: <i>Ceratostoma</i> [Muricidae]
Shells in Print [many new species illustrated] | Vol. 14 #3 (1986) — California Seashells Part XIII: <i>Megasurcula</i> , <i>Conus coromandelicus</i>
Morphological variation in <i>Muricodrupa jacobsoni</i> |
| Vol. 10 #4 (1982) — California Seashells Part II: <i>Pteropurpura</i> [Muricidae]
<i>Marginella tessellata</i> Rediscovered
Shells for the Amateur | Vol. 14 #4 (1986) — <i>Attiliosa caledonica</i>
California Seashells Part XIV |
| Vol. 11 #1 (1983) — California Seashells Part III: <i>Haliotis</i>
A South American <i>Solaropsis</i> [land shell]
Shells for the Amateur | |
| Vol. 11 #2 (1983) — California Seashells Part IV: Trochidae
A Rare Rostrate/ <i>Cypraea gracilis macula</i> | |
| Vol. 11 #3 (1983) — California Seashells Part V: Turbinidae
Night Diving Kwaj Style
Sarasota Fossils
Notes on <i>Murex/Murex bojadorensis</i> | |

(continued on page 14)



Crenavolva tigris (Yamamoto, 1971), showing warning coloration. The mantle contrasts with the color pattern of the host. This 10 mm specimen was photographed by Ray Phipps on 26 December 1987 at Split Solitary Island, New South Wales, Australia.

An Introduction To The Ovulidae (Gastropoda: Cypraeacea)

by Gary Rosenberg

Members of the family Ovulidae are often called Allied Cowries, an appropriate name because ovulids are the closest relatives of the true cowries, family Cypraeidae. Ovulids have a much greater variety of shapes than do cypraeids, ranging from globose to elongate, spindle-shaped. Ovulids generally lack the regular teeth on the inner lip characteristic of cypraeids. Ovulids and cypraeids together form the superfamily Cypraeacea, which is most closely related to the Velutinacea, a superfamily that includes the Triviidae (=Eratoidea) and Velutinidae (=Lamellaridae).

Ovulids occur worldwide in tropical and subtropical seas. Almost 400 names have been given to living species of ovulids, but I consider only about 160 to 170 of these to be valid. Of 65 generic names for ovulids, fewer than half are likely to prove valid. As in many groups of mollusks, many of the ovulid names have been introduced on the basis of only one or a few specimens. When larger series of specimens are studied and ranges of variation are understood, such names often prove to be synonyms.

One reason for this profusion of ovulid names is their capacity for variation. Ovulids vary extensively in color, with many species ranging from white or yellow through purple. Color pattern in ovulid shells is a more reliable characteristic than color per se. In many species of ovulids the smallest known adults are one half the size of the largest ones. Shape is also variable, particularly the ratio of length to width, and in some species a transverse dorsal keel can be present or absent. Minor variants in color, shape, and size have been named as full species.

Another reason that ovulids have been over-named is that their distributions have been misunderstood. Species that until recently had been considered endemic to Japan have now been reported from the Philippines and South Africa, and thus have broad Indo-Pacific distributions. Of sixteen species described by Azuma and Cate (1971) from Japan, all but two are now known

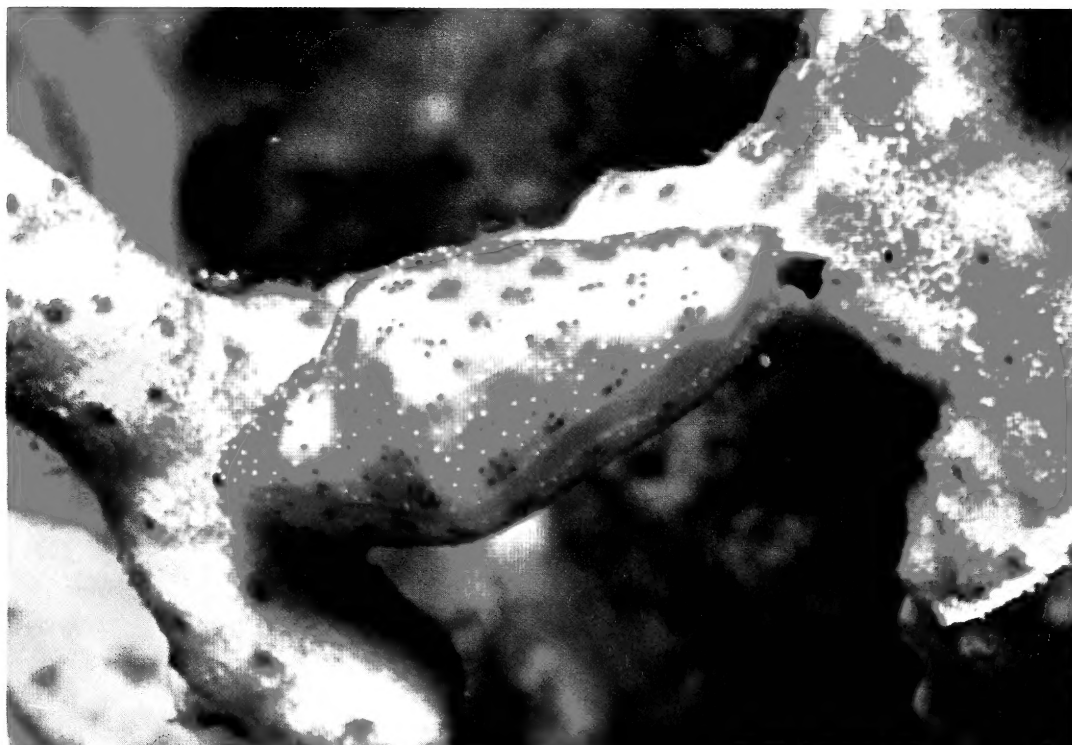
from elsewhere in the Indo-Pacific. It makes sense for ovulids to have broad distributions rather than to be narrow endemics, because, except for some pediculariines, all ovulids are thought to have planktonic larvae that can travel long distances in oceanic currents.

All ovulids are ectoparasites on octocorals, including gorgonaceans (horny corals) such as sea fans and sea whips, alcyonaceans (soft corals), and pennatulaceans (sea pens). Shell color, size, and proportions can all be affected by the host. In some ovulids, host pigments are incorporated into the shell and mantle, helping to camouflage the animal. If a young animal is transplanted to a host of a different color, the shell grown after the move will match the color of the new host. Presumably an animal living on a small host might be dwarfed, and one living on sea fans might have different proportions than one living on sea whips. Researchers haven't determined how much of the variation in ovulid shells is caused by environmental factors such as the characteristics of the host, and how much is genetically based.

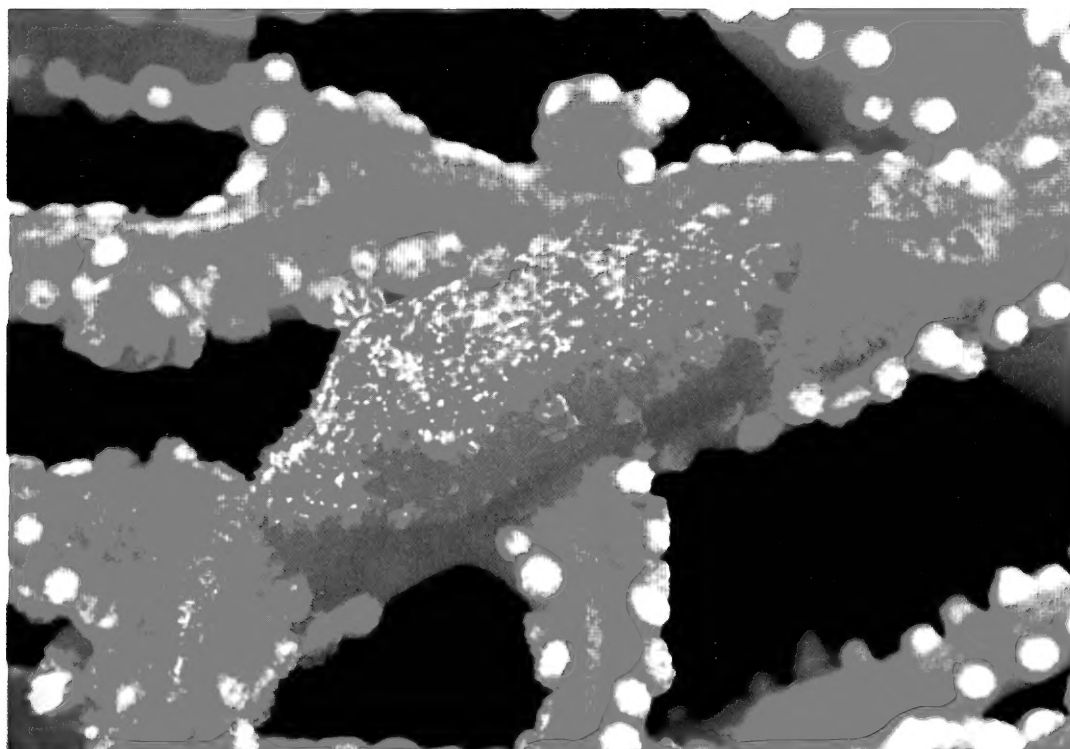
Most ovulids are cryptic, having shell or mantle color that blends with the coloration of the host, but a few species have warning coloration. These species advertise their distasteful or poisonous properties by being conspicuous, contrasting with the color of their hosts. Warning coloration is also known as **aposematism**, meaning "away-signaling."

The best known ovulid with warning coloration is the western Atlantic *Cyphoma gibbosum* (Linné, 1758), popularly known as the Flamingo Tongue. *Cyphoma gibbosum* is distasteful to fish because it harbors noxious chemicals in its mantle, including sterols and prostaglandins derived from its host. Other species of *Cyphoma* also have warning coloration, but the best example of a conspicuous color pattern among ovulids is found in the Indo-Pacific *Crenavolva tigris* (Yamamoto, 1971), which has a tiger-stripe pattern of orange, black and white. *Crenavolva tigris* is one of the few mollusks named for a characteristic of the soft parts rather than of the shell.

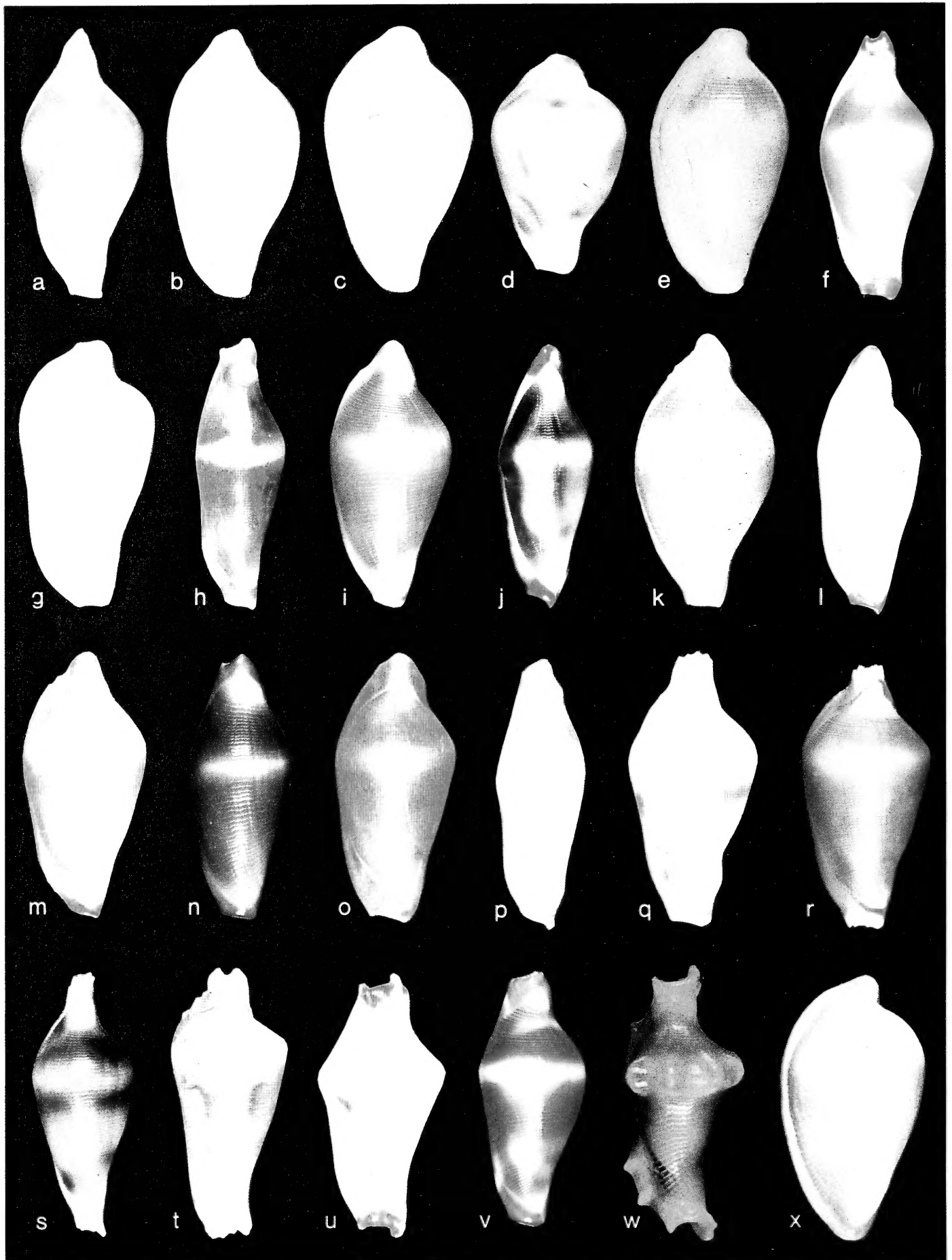
*Malacology Department, Academy of Natural Sciences of Philadelphia, 1900 Benjamin Parkway, Philadelphia, PA 19103-1195



Crenavolva cf. C. cuspis (Cate, 1973). A 9mm specimen photographed by Ray Phipps on 2 May 1987 at Marsh Shoal, Coffs Harbour, New South Wales, Australia.



Prosimnia semperi (Weinkauff, 1881), showing cryptic coloration. The mantle imitates the color and texture of its host. This 8 mm specimen was photographed by Ray Phipps on 2 May 1987 at Marsh Shoal, Coffs Harbour, New South Wales, Australia.



- a. *Primovula azumai* Cate, 1970. 8mm. Wakayama, Japan. Purple, pink, orange or yellow.
- b. *Primovula beckeri* (Sowerby III, 1900). 6mm. East London, South Africa.
- c. *Primovula concinna* (Adams & Reeve, 1848). 9mm. Bogo Island, Cebu, Philippines.
- d. *Primovula florida* (Kuroda, 1958). 8mm. Wakayama, Japan. (Synonym of *P. roseomaculata* Schepman, 1909?)
- e. *Primovula narinosa* Cate, 1973. 7mm. Holotype. Geelvink Bay, New Guinea.
- f. *Primovula rosewateri* (Cate, 1973). 9mm. Belep, New Caledonia. White to purple, with orange tips.
- g. *Primovula rutherfordiana* Cate, 1973. 10mm. Keppel Bay, Queensland, Australia.
- h. *Crenavolva borbonica* (Deshayes, 1863). 8mm. Reunion.
- i. *Crenavolva cuspis* Cate, 1973. 9mm. Cebu, Philippines.
- j. *Crenavolva formosa* (Adams & Reeve, 1848). 15mm. Cebu, Philippines.
- k. *Crenavolva ostheimeræ* Cate, 1973. 6mm. Holotype. Geelvink Bay, New Guinea.
- l. *Crenavolva platysia* (Cate, 1973). 11mm. Clairview, Queensland, Australia.
- m. *Crenavolva singularis* (Cate, 1973). 8mm. Park Rynie, Natal, South Africa.

- n. *Crenavolva striatula* (Sowerby I, 1828). 9mm. Wakayama, Japan. White to purple.
- o. *Crenavolva tigris* (Yamamoto, 1971). 12mm. Siasi Island, Philippines. Yellow to purple.
- p. *Crenavolva tosaensis* (Azuma & Cate, 1971). 7mm. Wakayama, Japan. White to pink.
- q. *Dentiovula colobica* (Azuma & Cate, 1971). 9mm. Wakayama, Japan. (+ *D. saturnalia* Cate & Azuma, 1973.)
- r. *Dentiovula dorsuosa* (Hinds, 1844). 10mm. Cebu, Philippines. (+ *D. mariae* Schilder, 1941.)
- s. *Dentiovula eizoi* Cate & Azuma, 1973. 9mm. Wakayama, Japan.
- t. *Dentiovula masaoi* Cate, 1973. 8 mm. Horseshoe Cliffs, Okinawa.
- u. *Dentiovula septemmacula* Azuma, 1974. 7mm. Paratype. Kirimezaki, Japan.
- v. *Dentiovula takeoi* Cate & Azuma, 1973. 11mm. Mindanao, Philippines. Orange to purple.
- w. *Rotaovula hirohitoi* Cate & Azuma, 1973. 6mm. Reunion. Described from Japan.
- x. *Carpiscula bullata* (Adams & Reeve, 1848). 10mm. Phuket, Thailand. (+ *C. galearis* Cate, 1973.)

One intriguing question about ovulids with warning coloration is how they evolved to begin with. Although animals with warning coloration are usually poisonous or distasteful (for example, monarch butterflies), predators are not born instinctively knowing this. Rather, they must learn to avoid animals with warning coloration. Assume that a conspicuous mutant individual appears in a distasteful species in which other individuals are cryptic. Presumably predators will be attracted to it, and it will be killed, though not eaten, in the encounters in which it teaches predators not to eat it. Conspicuousness would then be disadvantageous, and conspicuous individuals would be eliminated.

Students of warning coloration in butterflies noticed that in species with conspicuously colored caterpillars, the caterpillars were gregarious, and siblings, having hatched from the same cluster of eggs, were likely to be near each other. Given a well-timed mutation, a group of conspicuous mutants might hatch together. This suggested that a predator might kill a few of the brightly colored mutants while learning to avoid them, but that their nearby relatives with similar coloration would benefit from the lesson. Warning coloration would thus evolve by kin selection.

This scenario is impossible for ovulids! (It turned out not to be true for butterflies either.) Because ovulids have planktonic larvae, siblings are extremely unlikely to settle next to each other. This means that an individual *Cyphoma* must survive repeated tasting by predators (presumably fish). *Cyphoma* have the thickest shells among ovulids, indicating that they have evolved to survive being tasted and rejected by fish. An ovulid that wasn't distasteful would probably be swallowed whole by a fish, so a thick shell would offer it no protection. On the plate accompanying this article, one of the 34 species illustrated can be seen to have thicker marginal calluses than the others. This is the shell of the conspicuously colored *Crenavolva tigris*.

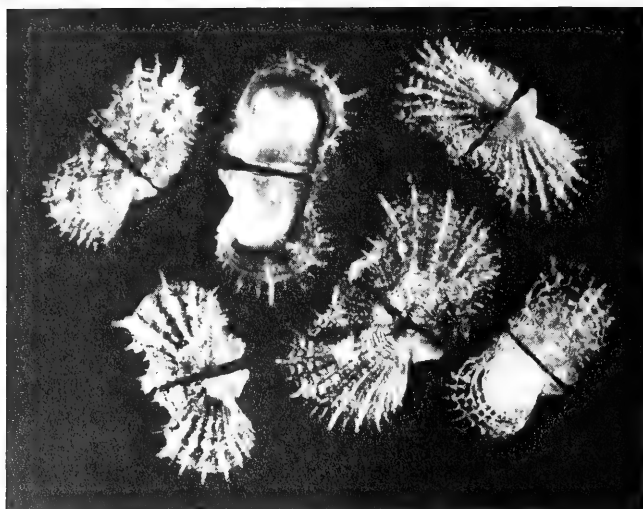
I should note that not all distasteful species have warning coloration. One species might be distasteful to all predators and

so might be conspicuous, while another might be distasteful to only some, and so would be cryptic. In general, one would expect distastefulness to evolve first, followed by toughness, then by conspicuousness. It is also possible for a species to have conspicuous coloration without being distasteful, if it is mimicking a species that is distasteful, but mimicry among ovulids has not yet been reported.

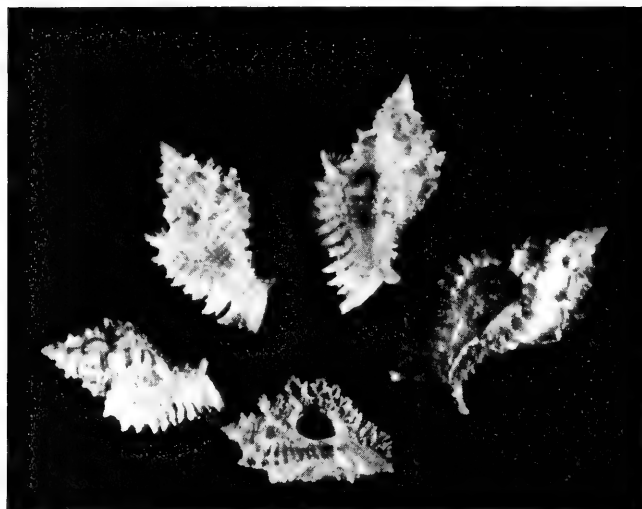
By now, one might have the feeling that it takes a lot of study to understand why a species has the characteristics it does. The amateur collector can help by making field observations. The hosts of many species of ovulids are unknown, and pictures of the live animals of many species are unavailable. Preserved material is needed for anatomical studies. Understanding the species limits of ovulids is difficult when working from shells alone; understanding the generic limits from shells alone is probably impossible in some cases. The distinctions among *Primovula* (figs. 1a-g, color plate), *Crenavolva* (figs. h-p), and *Dentiovula* (figs. g-v) are subtle, and species have often been shifted among them. Perhaps with knowledge of the living animals and their anatomy, it will be possible to define these and other genera more satisfactorily.

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- . 1991. Aposematism and synergistic selection in marine gastropods. *Evolution* 45:451-454.



Pinctada imbricata from the "Aeolus."



North Carolina *Murex florifer dilectus*.

SHELLING THE GHOST FLEET OF THE ATLANTIC

by Teri Marché and Tom Grace

Each year, North Carolina's seashore, with its barrier islands, inlets, and resorts, plays host to thousands of visitors. The magnificent Outer Banks provide an opportunity to explore a natural environment of beaches and sand dunes that once graced the entire eastern seaboard. Developed resorts such as Atlantic Beach cater to a busier lifestyle. Whether for swimming, sunning, sailing or fishing, visitors return time and again.

Most vacationers remain contentedly on the beach, but for an ever-growing number of visitors the real attraction lies offshore. The SCUBA diving industry is just now beginning to flourish in North Carolina, and on this coast, that means wreck-diving. Conchologist-divers find here a truly amazing molluscan habitat.

One of the reasons for the surprising array of molluscan species here involves the offshore geology. Those beautiful miles-long sandy beaches extend seaward onto a wide, gently-sloping continental shelf. Three miles offshore the depths average about 50 feet; 18 miles out it is only about 80 to 90 feet deep. You must travel 25 to 30 miles offshore to reach depths of over 100 feet. And over all of that distance one finds on the bottom a veritable sand desert, interspersed with occasional rock ledges and grass beds. It is, for the most part, trackless and empty. Sand-dwelling mollusca live here; helmets, pen shells, scallops, whelk, moon snails and baby's ears. This is also home to the Scotch Bonnet, *Phalium granulatum*, proclaimed state shell of North Carolina. These are the shells that wash up on the beaches and find their way into the guide books as belonging in North Carolina.

But there are other species, relatively new to the area, whose presence has gone unnoticed by conchological writers. Many are listed as occurring in Florida or the Caribbean only. Most require the type of hard substrate that has, until recently, been unavailable in these waters. This substrate, with the habitat it provides, is totally man-made, dating only from the first days of sailing and shipping on this coast, about three to four hundred years ago. Almost as soon as ships arrived on this coast, ships began to go down. Again, geology played its part, with Capes Hatteras, Lookout and Fear wreaking havoc on coastal routes. Every

shipwreck, while certainly a human disaster, soon became a marine opportunity. Whole ecosystems, impossible in earlier times, began to flourish on every wreck. A continuous line of these wrecks, the "Ghost Fleet of the Atlantic," stretches the length of the state.

However, the existence of this ghost fleet alone is not enough to explain the presence of molluscs that don't "belong" here. There is another factor to consider — the Gulf Stream. This mighty river of warm tropical water travels north along the coast, just offshore from Cape Fear to Cape Hatteras, before veering farther out to sea. It invades the colder northern waters and brings with it travelers of all sorts from the warmer south. In the offshore waters of North Carolina one finds a wonderful mingling of northern cold-water species and southern, tropical varieties. Molluscan veligers must have been carried north in this current for eons, but until the arrival of the "ghost fleet," those needing a hard substrate simply could not survive. These Gulf Stream passengers vary from year to year, so the conchologist-diver is almost always in for a surprise.

My first experience of North Carolina was a late-season trip to the Outer Banks in the mid-1970's. I promptly fell in love. From Kitty Hawk to the Oregon Inlet, the miles of sandy beach provided hours of enjoyment, not to mention the shells I never expected to find so far north. Later years brought opportunities to hunt the scallop dumps of Carteret County. One locality alone has yielded over 200 species, many of them microscopic, that would otherwise have been unavailable. Even so, most of the material collected this way represents sand-dwelling or free-swimming molluscs.

It was not until 1982 that I first made my acquaintance with the "ghost fleet." In those days there were few boats operating in the area, but one of the earliest and, to my mind, still the best, is the *Olympus*, captained by George Purifoy out of Morehead City. George is credited with the discovery of the wreck, *U-352*, a German submarine lying nearly intact 30 miles offshore. This relic of the "secret war" along the East Coast was my first dive site in North Carolina. After weeks of deliberation, instruction and warnings, the dive club finally considered this female diver ready for the wreck trip. North Carolina diving can be treacherous; the dive sites are located miles out in open water, with sudden squalls, strong currents, potentially dangerous depths, and unpredictable visibility. Diving was still a "macho" sport and I, the only woman on the boat, was about to make my first North Carolina dive.

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After all this caution, the day arrived with perfect weather, mirror-calm seas, 60-foot visibility, and very light current. All diving here centers on the anchor line. The boats anchor into the wrecks, so the line is the only sure way to find the site. I was positively hyperventilating with excitement on the way down the line. The school of "sharks" below me turned out to be — calm down! — amberjacks, still really large fish! Then, 60 feet below me the sub came into view. It was incredible! So small! Lying at 115 feet, the wreck was ours to explore for 15 minutes — time enough to cruise from stem to stern on such a small ship.

The outer hull is long since gone, but the pressure hull and conning tower are home to *Murex dilectus*, *M. pomum* and *M. fulvescens*, the first I had seen alive. That first day also yielded a mystery shell, discovered in great numbers, but all crabbed. These eventually proved to be *Latiaxis mansfieldi*, a species that has become very special to me. Other dives on the **U-352** have yielded *Cypraea cervus*, *Calliostoma euglyptum* and *Astraea phoebia*. The first giant *Cymatium parthenopeum* I had ever seen was taken off the sub on another day by my dive buddy, Tom Grace. He showed it to me underwater, his eyes almost as large as the shell, and back on the boat he swore that there was a second one in his bag for me. It was not there. Sounds like another case of nitrogen narcosis, "rapture of the deep," a common occurrence at this dive site.

The other dive of the day was on the wreck **Schurz** that has since become a favorite of mine. Built in 1894 and lost in 1918, she was also discovered by George Purifoy 27 miles out and 110 feet down. This wreck is distinctive for the fantastic numbers of fish it attracts, and for its cowries. Divers must usually swim through clouds of fish on the way down. I have often had to push the fish aside just to see while I was hunting for shells. Every dive on the **Schurz** has yielded *Cypraea cervus*, and once there was a *Cypraea spurca acicularis*. A fellow diver (of good repute) who has been learning about shells, once related the story of a night dive on the **Schurz** when the wreck was "covered" with cowries. This sight, with moonlight streaming through a hundred feet of water, proved so fantastic that he forgot to collect any specimens. Other finds on the **Schurz** over the years have included *Conus floridanus floridensis*, *Lyropecten nodosus*, *Glycymeris americana*, *Murex leviculus*, and my first live *Latiaxis mansfieldi*.

I had been diving North Carolina for about five years before I first met Tom and introduced this California diver to East Coast waters. One of our earliest trips included the wreck **Atlas**. Torpedoed in 1942 by the **U-552**, the ship lies at 130 feet, about 12 miles off Cape Lookout. Our dive that day took us only as far as the upper deck at about 90 feet. There we found a bonanza.

The area, about the size of a large living room, was covered with *L. mansfieldi*. We quite literally picked through them, selecting only the largest and least encrusted. There were hundreds! That was the day we decided *L. mansfieldi* is **not** a rare or even an uncommon shell. Some, upon cleaning, proved to be pink, both inside and out. Since that day, *L. mansfieldi* have been found on every offshore wreck in the area, and on some of the offshore ones. However, later dives in the area failed to produce the same thrilling phenomenon.

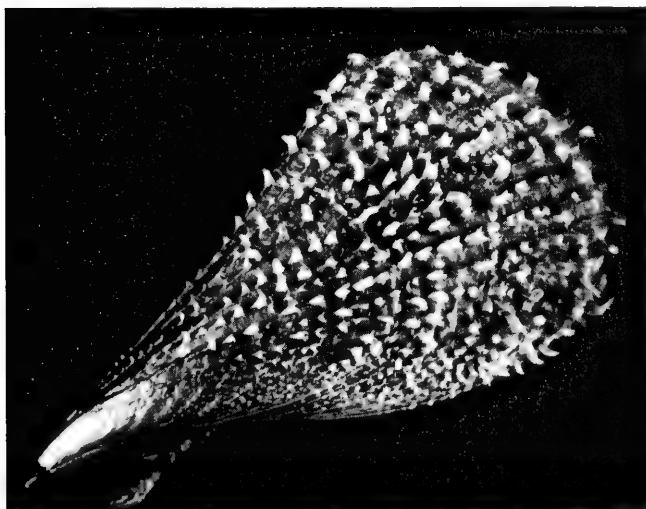
It is impossible to overemphasize the differences between inshore and offshore wrecks. Conditions, in terms of the preservation of the wrecks, water temperature, clarity, and biology, contrast markedly. Offshore wrecks are, for the most part, intact, while inshore wrecks are usually very broken up and spread out. This is no accident. The Coast Guard has dynamited and cable-dragged wrecks that lie in less than 80 feet because they pose a hazard to shipping. The result is a confused scrap pile.

Offshore wrecks generally have warmer water and better visibility. Proximity to the Gulf Stream is the main influence here. Inshore wrecks owe their poorer visibility to shallower depth, wave action and colder water. There is just more "stuff" living suspended in the water column. Most inshore dives feature a thermocline, with a drastic temperature change to colder water on the way down.

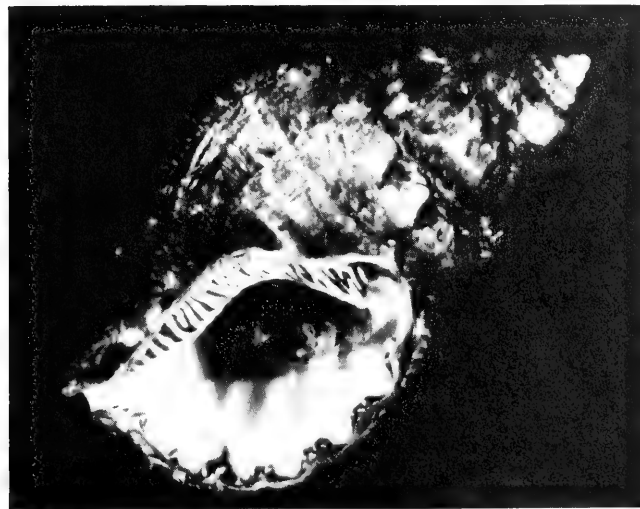
Surprisingly, the greatest amount of coral is to be found on inshore wrecks like the **Hutton**, the **Suloide** and the **Portland**. A possible explanation involves the fact that coral polyps feed by filtering food from the water. Such food is in greater abundance at inshore sites. Offshore wrecks generally harbor the more exotic, tropical molluscs, while inshore sites yield species more typically found on sand.

The **Hutton** and **Suloide** have yielded beautiful *Fasciolaria*, both *F. hunteri* and *F. tulipa*, unique for their bright red colors. Such altered coloring is fairly typical of shells from the wrecks, and is not merely rust stain. The colors are in the shells, producing deep red-brown *Oliva spicata*, an entire range of colors, from pink to deep brown, in *M. dilectus* and *pomum*, and the pink of the *Latiaxis mansfieldi*. *Spondylus americanus* are often solid orange or pink. *Pinctada imbricata* from the **Aeolus** range from yellow to reddish black. Generally, in order to acquire any rust stain, the shell must be lying in the mud for a while, in or against the wreckage. These shells are always empty.

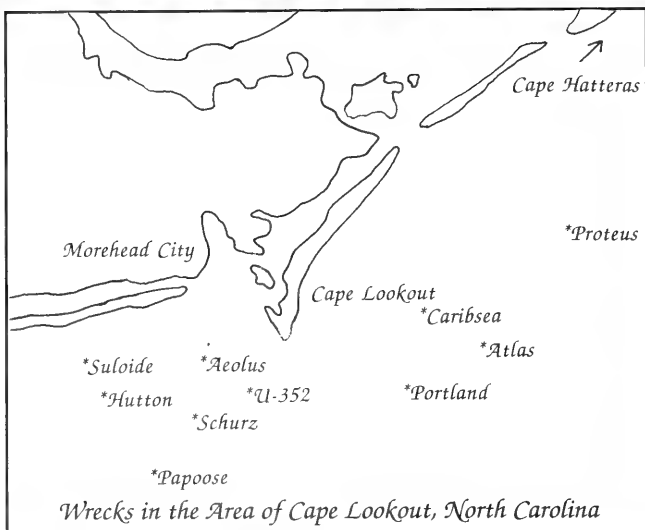
My most northerly dive was off Ocracoke, just south of Cape Hatteras. The **Proteus**, a luxury passenger steamship, went down there in 1918 after colliding with a tanker. She lies in 125 feet of water. For most divers the attractions here are the sharks



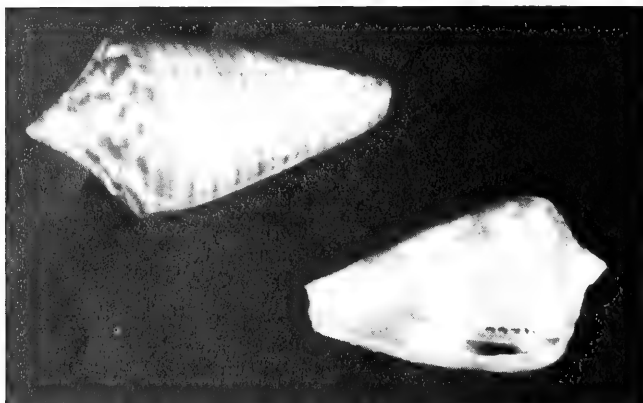
Atrina rigida from the "Hutton".



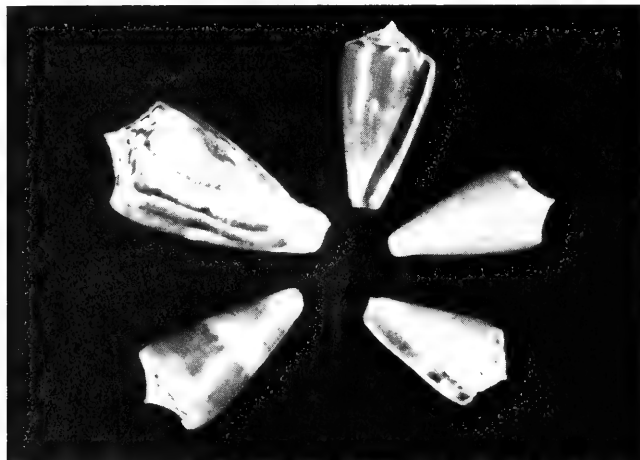
Cymatium parthenopeum from the "Papoose" — 130 feet.



Vexillum species found in great numbers on the "Papoose" — I'd appreciate help in identification.



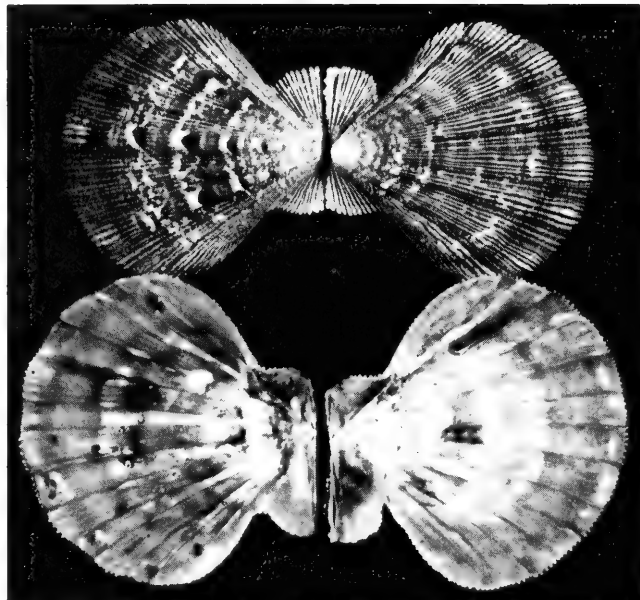
Above: *Conus floridanis floridensis* from the "Schurz"; below: *Conus ermineus* from the "Papoose."



Conus ampliurgus color forms — some authors consider this to be *Conus juliae*.

(always present but never a problem) and the stained glass and brass windows that graced the first-class passenger staterooms. For me, the excitement was the discovery, by another diver, of a medium sized *Charonia variegata*, empty and a bit rusty, but so far north! Many bright orange *Lyropecten nodosus* turned up, as well as my first *Distorsio mcgintyi*.

One final story concerns the **Hutton** and our local shell club (The Cen Penn Beachcombers) emblem, the Rigid Pen Shell, *Atrina rigida*. The **Hutton** is an inshore wreck, so spread out that I have never seen all of it. A Texas oil tanker, she was torpedoed by the U-124 in 1942 just 12 miles offshore and now lies at 70 feet. Much of the wreckage is buried in sand that shifts from year to year, burying and exposing parts of the site. I took a small light down to hunt in and under the wreckage. A large pipe, about two feet in diameter, was partially buried, but directing my light into the opening, I could see something that was unfamiliar. I couldn't look and reach at the same time because of limited space, so, after ascertaining that this was not an oyster cracker (a frilly fish with a most powerful bite) I reached blindly in. It was a huge (everything **looks** bigger under water, but sense of touch doesn't lie) pen shell. Lying on my back on the bottom, I began to dig it out while watching schools of fish circling overhead and thinking myself the luckiest person in the world just to be there. The byssal threads proved their worth and I could not free the shell. With time and air running low, I went for Tom. You cannot speak underwater, so I tried pantomime. Finally, reaching in to the shell, I put Tom's hand on my arm. He got the idea and worked down the arm to the shell. I knew, by the size of his eyes, when



Lyropecten nodosus from the "Proteus" (above) and the "Schurz" (below).

he realized what was there. One tug and the most magnificent 12-inch pen shell came into my collection. It has become my singular favorite.

It takes a lot of effort to dive in North Carolina when you are living in Pennsylvania (and even more from Indiana, where I now live). There is an eight-hour drive each way, three-to-four-hour boat rides to the sites, often seasick the whole time, for two dives that might add up to an hour in the water. The day's diving can easily be cancelled by windy weather that produces eight-to-twelve-foot waves. I have often been asked if it is worth it. The answer is a most emphatic and unqualified "Yes!" In addition to the high adventure of offshore diving, this is a unique mixture of

ecosystems to be found nowhere else on the coast.

The following is a list of species found on the "Ghost Fleet" by both Tom and me from 1982 to 1991. Species marked * are, according to Abbott, not found this far north, although some are recognized from South Carolina.

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 Farb, R.M., 1985. Shipwrecks: Diving the Graveyard of the Atlantic. Menasha Ridge Press, Birmingham, Alabama.
 Porter, H., and J. Tyler, 1981. Sea Shells Common to North Carolina. University of North Carolina Sea Grant Publication UNC-SG-72-09

Aequipecten muscosus (Wood, 1828)
Agatrix smithii (Dall, 1888)
Americardia media (Linné, 1758)
Anachis lafresnayi (Fischer & Bernardi, 1856)
Anadara notabilis (Roding, 1798)
Anomia simplex Orbigny, 1842
Arca imbricata Bruguière, 1787
Arca zebra (Swainson, 1833)
Arcinella cornuta Conrad, 1866
Argopecten gibbus (Linné, 1758)
**Astraea phoebia* Roding, 1798
Atrina rigida (Lightfoot, 1786)
Atrina serrata (Sowerby, 1825)
**Bailya parva* (C. B. Adams, 1850)
Barbatia candida (Helbling, 1779)
Barbatia domingensis (Lamarck, 1819)
Busycon contrarium (Conrad, 1840)
Busycon spiratum pyruloides (Say, 1822)
Calliostoma euglyptum (A. Adams, 1854)
Calliostoma pulchrum (C. B. Adams, 1850)
Cancellaria reticulata (Linné, 1767)
Cantharus multianqulus (Philippi, 1848)
Cerithium atratum (Born, 1778)
Chama congregata Conrad, 1833
Chama macerophylla (Gmelin, 1791)
Chione grus (Holmes, 1858)
Chione intarpurpurea (Conrad, 1849)
Chione latilirata (Conrad, 1841)
**Chlamys benedicti* (Verrill & Bush, 1897)
Colubraria lanceolata (Menke, 1828)
Conus amphiurgus Dall, 1889
**Conus daucus* Hwass, 1792
**Conus delessertii* Recluz, 1843
Conus floridanus floridensis Sowerby, 1870

**Conus ermineus* Born, 1778
**Conus mus* Hwass, 1792
**Crassispira albomaculata* (Orbigny, 1842)
Crepidula aculeata (Gmelin, 1791)
**Crepidula maculosa* Conrad, 1846
Crepidula plana Say, 1822
Cymatium krebsii Mörch, 1877
**Cymatium nicobaricum* (Roding, 1798)
Cymatium parthenopeum (Von Salis, 1793)
**Cymatium rubeculum occidentale* Clench and Turner, 1947
Cymatium pileare (Linné, 1758)
Cyphoma macgintyi Pilsbry, 1939
Cypraea cervus Linné, 1771
Cypraea spurca acicularis Gmelin, 1791
Dinocardium robustum (Lightfoot, 1786)
Diodora cayenensis (Lamarck, 1822)
Eucrassatella speciosa (A. Adams, 1852)
Fasciolaria lilium hunteria (Perry, 1811)
Fasciolaria tulipa (Linné, 1758)
Favartia cellulosa (Conrad, 1846)
Ficus communis Roding, 1798
Glycymeris americana (DeFrance, 1829)
Hiattella arctica (Linné, 1767)
Laevicardium laevigatum (Linné, 1758)
Laevicardium pictum (Ravenel, 1861)
**Latiaxis mansfieldi* (McGinty, 1940)
**Latiurus angulatus* (Roding, 1798)
**Lima scabra* (Born, 1778)
Lithophaga aristata (Dillwyn, 1817)
**Lopha frons* (Linné, 1758)
Lyropecten nodosus (Linné, 1758)
Macrocallista maculata (Linné, 1758)
Macrocallista nimboza (Lightfoot, 1786)
Mitra nodulosa (Gmelin, 1791)

**Modiolus americanus* (Leach, 1815)
Modiolus modiolus squamosus Beauperrthuy, 1967
**Morula didyma* (Schwengel, 1953)
**Morula nodulosa* (C. B. Adams, 1845)
**Murex florifer dilectus* A. Adams, 1855
Murex fulvescens Sowerby, 1834
Murex leviculus (Dall, 1889)
Murex pomum Gmelin, 1791
Musculus lateralis (Say, 1822)
Nassarius albus (Say, 1826)
Natica canrena (Linné, 1758)
Oliva sayana Ravenel, 1834
Ostrea permollis Sowerby, 1841
Papyridea soleniformis (Bruguière, 1789)
Phalium granulatatum (Born, 1778)
**Pinctada imbricata* Roding, 1798
Pisania tinctoria (Conrad, 1845)
Pleuroploca gigantea (Kiener, 1840)
Pteria colymbus (Roding, 1798)
Pyrgospira ostrearum (Stearns, 1872)
Scaphella junonia (Lamarck, 1804)
Seila adamsi (Lea, 1845)
Sinum perspicuum (Say, 1831)
Solecurtis cumingianus Dunker, 1861
Spondylus amreicanus Hermann, 1781
**Spondylus ictericus* Reeve, 1856
Strombus alatus Gmelin, 1791
Tagelus plebeius (Lightfoot, 1786)
Terebra concava Say, 1827
Terebra dislocata (Say, 1822)
Thais haemostoma floridana (Conrad, 1837)
Trachycardium egmontianum (Shuttleworth, 1856)
Turbo castanea Gmelin, 1791

COA'S GRANT PROGRAM CONTINUED

The COA is pleased to announce that it is continuing its support of molluscan research by extending its grant program into 1992. Grants of up to \$1500 per application will be available to qualified persons undertaking recent or fossil, field or laboratory work.

Applicants must outline the proposed project and the amounts and purposes for which the award will be used, including requested supplies, expendable equipment, living and/or travel expenses, or publication and illustration costs. The applicant should also submit a short biography that includes his or her educational status or pertinent job experience and a letter of recommendation from a scholastic or professional source.

The deadline for grant applications is May 1, 1992. They should be mailed to:

Dr. R. Tucker Abbott
 P.O. Box 2255
 Melbourne, FL 32902-2255

Applications are judged by the COA committee and awards are made by June 1st. Please note that awards are only made to citizens or permanent residents of the Americans or to students attending graduate schools in the United States, and do not cover salaries, overhead, permanent equipment, conference or meeting costs.

If a grant is awarded, a brief popular account of the project is requested for *American Conchologist*, as well as a published account of the research, if applicable. — J.O.

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OPERATION SHELL-WATCH

The AMU Conservation Committee is interested in beginning Operation Shell-Watch. Observers in the field will be asked to submit data or impressions on population trends of various species. Response will be given in an annual report by the Chair of the Conservation Committee. Report of these observations and trends would appear to be excellent projects for member shell-clubs, especially those in California where collecting of marine species is restricted or prohibited. Any comments on California species should be sent to Dr. Mary Ellen Harte, 1180 Cragmont Ave., Berkeley, CA 94708. Regional volunteers should write to Dr. Raymond W. Neck, Houston Museum of Natural Science, One Herman Circle, Houston, TX 77030

We just had word that Ed Sarkin, noted Florida collector and exhibitor, died March 3rd, of congestive heart failure after a long battle with cancer. The shell world will miss him.



Pinctada imbricata, the Atlantic Pearl Oyster, (the dark, roughly circular object in the center) takes advantage of the food-bearing currents by attaching to soft corals. (Bahamas — Peggy Williams photo)



Uprooted from its sandy nest, the Pen Shell's byssus can just be seen at the bottom of this photo. Note the marine growth only on the upper portion of the shell. (St. Petersburg, Florida — Peggy Williams Photo)

WHY THEY LIVE WHERE THEY LIVE

by Peggy Williams

Mollusks come in an incredible variety of shapes, sizes and colors — and this is mostly by design. Shell characteristics are often adaptations to the environment and the struggle to survive, for mollusks, as all animals must 1) find food, 2) protect themselves from predators, 3) survive within the limits and perils of their environment, and 4) avoid competition for available food and living space. The adaptation of shell and habits to satisfy these needs among mollusks is fascinating.

In the marine environment there is a great variety of available habitat — sand bottom, rock bottom (and in-between — shelly or rubble bottom), coral reef, algae on sand, algae-covered rock, and so on. There is deep water, middle depth, shallow water, the intertidal area, and moist salt-air environment. There are variations in salinity and temperature. There is also open sea, seemingly bottomless, hostile and empty. Each habitat supports a different group of mollusks, adapted especially to the limitations and possibilities of that singular niche.

Hanging On for Dear Life

Many bivalves, being relatively immobile (compared to gastropods) must find ways to anchor themselves in a preferred environment, where they may find safety and an abundance of food. Though they can travel short distances by extending the foot outside the shell and pushing or pulling with it, this movement is limited and doesn't serve to reorient the animal during storms.

Some bivalves anchor themselves for life by cementing their shells to a rock substrate. This makes it hard to collect some species, such as *Chama* (Jewel Boxes) and *Spondylus* (Thorny Oysters) without taking some of the heavy rock as well! Collecting efforts often result in half a shell, with the bottom portion still firmly cemented. The advantages to being so tightly tied to home are clear: when the valves are closed, predators find it impossible to either move or penetrate the shell. These shells, living generally in areas exposed to the current (where the most food will drift by), are thick and heavy. They often have complicated spines which help discourage predation and also serve to collect sponges, algae, and sediment, thus camouflaging themselves. I have found many *Spondylus* only by watching them slowly close the invisible shell!

P.O. Box 575, Tallevast, FL 34270

Hinnites multirugosus, the Giant Rock Scallop of the U.S. Pacific coast, moves about freely like other scallops as a juvenile and attaches itself to rocks as an adult. The juvenile part of the shell is discernible on the adult, since beyond that point the shell grows irregularly to help conform to the rock face.

It is impossible for a bivalve to cement itself to the surfaces in many habitats, such as sand, soft coral forests, and harsh surf zones, so many bivalves secrete a chitinous thread called a byssus. This is sticky when first formed and adheres to the substrate, then hardens to keep the shell firmly attached. The other end of the byssus is embedded in the animal's flesh. The byssus of the Blue Mussel, *Mytilus edulis*, is so strong that scientists hope its secrets may be used in making dental cements that are impervious to moisture. These mussels live in large colonies, each secreting several thick, black 1-2" long threads to hold it in place on the rock and among its neighbors. Since they live in the heavy surf zone, they must remain firmly anchored!

The Ark Shells make a byssus that is single but very heavy and strong. It is so thick that the edge of the shell must conform to its shape, leaving a gape or hole when the shell is closed. The animal orients itself with the opening of the shell (and the byssus) toward the rock on which it rests, and when closed, it is extremely hard to dislodge. The only predator I have seen able to overcome the Turkey Wing Ark's defenses (which include its thick, heavy shell) is the heavy-clawed Stone Crab, which literally can crush the shell. I have great respect for Stone Crab claws!

Gaining maximum advantage from water currents bringing food are the Wing Oysters, *Pteria* spp., and Pearl Oysters *Pinctada* spp., which often attach to soft corals growing high above the rock or sand bottom and bending to the current. In this high-rise living space, they are safer from crabs and other bottom-dwelling predators. The shells have a notch at the edge of the hinge to accommodate the byssus.

One of the two mollusks most often seen by non-shelling scuba divers* is the "Flame Scallop," *Lima scabra*. This dull-shelled animal has a brilliant red mantle and tentacles which it

* The other is the Flamingo Tongue, *Cyphoma gibbosum*, to be discussed in a future article.



Pen Shells lie buried in sand with only the upper edge exposed. (St. Petersburg, Florida — Peggy Williams Photo)

extends from its hole in the coral reef to catch passing food particles. But a casual grab at the shell shows it to be firmly attached to the rock with its byssus.

The Pen Shells, *Pinna* spp., prefer to live in sand, but the large, heavy, cumbersome shell is hard for the mollusk to move about. Therefore, they live half buried, with many long, silken byssal threads holding them in. It's easy to see where the shell was covered with sand, since the exposed parts are often encrusted with algae, barnacles and other mollusks (often Ark Shells



Lima scabra attaches to the coral reef with its thread-like byssus. (West Palm Beach, Florida — Peggy Williams photo)

attach to the Pen Shell's byssus!) This anchor is unequal to heavy storm surge, and, after Florida's winter northeasters, the beach is littered with freshly unearthed Pen Shells.

All marine environments are at once hostile and friendly to life. The bivalves have adapted in many unique ways to the limitations and advantages of varied habitats. Since the byssus is such an important part of the animal's way of life, I like to preserve it with my bivalve specimens, just as I do the opercula of gastropods.



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OUR COA CLUBS — A CLOSER LOOK

by Nancy Gilfillan

Alabama is a state which seems to be coming of age these days, club-wise. In the first half of 1988 there were no shell clubs at all; today the state has two clubs, one in the north and one in the south.

The North Alabama Shell Club

Huntsville, Alabama, the cradle of the first large United States missiles and outer-space flight programs, and home of the largest space museum in the world, had several persons (and nearby Decatur had one) who had various-sized shell collections and a need to talk seashells with somebody. . .anybody! The trouble was, they did not know each other.

At the 1988 COA Convention, our current COA President and his wife were talking with two friends, and they decided to form a shell club. They ended up advertising in the newspapers for a January 1989 meeting. Ten people attended, the regular meeting was set for the third Tuesday of each month, and the North Alabama Shell Club was on its way. Today the club has 30 members. Club dues are \$7.50 (single) and \$12.00 (family).

The club supplied and set up a large shell exhibit for one month in the Decatur Public Library in the fall of 1989, and for two months in the Huntsville Public Library in early 1990.

In the spring of 1990, the club adopted *Nautilus pompilius*, the Chambered Nautilus, as its logo. Club pins were designed bearing that nautilus in the center; they sell for \$3.00 to club members and \$4.00 to non-members. In September, 1990 the club began publishing a bi-monthly newsletter called **The Nautiloid**, edited by Glen Deuel.

For information, contact Glen at 8011 Camille Drive, Huntsville, Alabama, 35802.

The South Alabama Shell Club

On October 22, 1990, sixteen people in Mobile attended a meeting to form what is now the South Alabama Shell Club. They adopted a logo featuring the State Shell of Alabama, *Scaphella junonia johnstoneae*, Juno's Volute.

The first newsletter was sent out in November, 1990, and after several name changes, emerged in March 1991 as a monthly newsletter called **The Johnstonian**. Meetings are the first Monday of each month at the Mobile Festival Center community room at 7:00 p.m. Programs are varied and informative, and members have a "show and tell" session at almost every meeting.

The current president of the South Alabama group, Ron Knight, is on assignment in Papua New Guinea but returns every other month, and he has added much interesting information to their meetings. Ron is a well-known land shell collector as well as a student of marine shells, and he has had many articles on land shells published in **Hawaiian Shell News**.

At present, the club has 33 members. Dues are \$5.00 (single) and \$7.00 (couple). For information, contact Douglas Shelton, 2283 Crystal Key Drive, Mobile, Alabama 36695. Doug, by the way, is the founder of the club. He drew some of his inspiration for the project from Glen Deuel's success with the North Alabama Shell Club.

So, if you are in Alabama, whether north or south, you have a club to visit and shell collectors to contact. Do so and you'll be welcomed. That legendary southern hospitality is alive and well in the hands of these two up-and-coming groups.

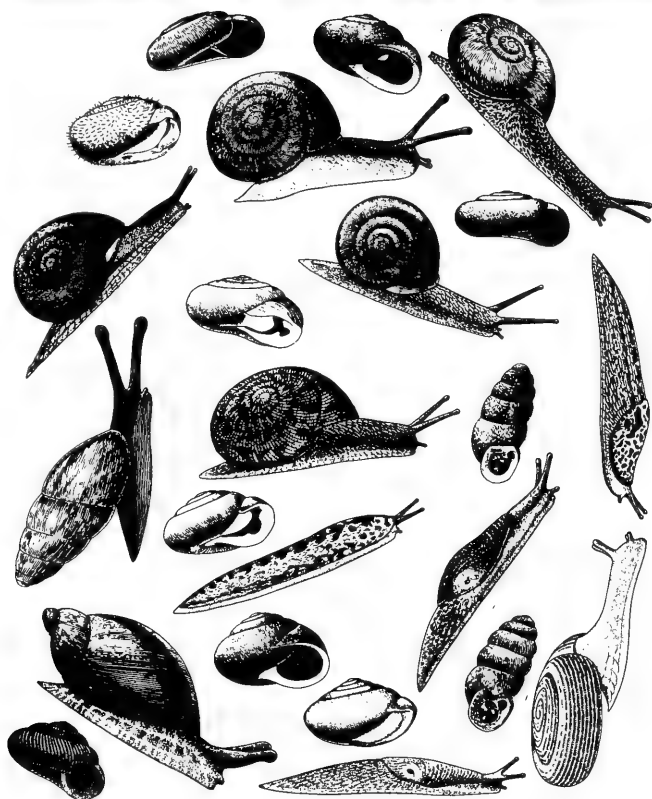
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John Chesler at the 30th Annual Greater Miami Shell Show with his COA Trophy winning exhibit, "The Genus: *Oliva*."

**WANTED:****Information on Indiana Landsnails**

by Dr. David A. Smith

Imagine a secluded, sandy beach and a leisurely afternoon beachcombing for that perfect tropical specimen. Your field equipment is a bathing suit, T-shirt, sun glasses and tanning oil. Now imagine a deep, dark woods somewhere in central Indiana in mid-July. The temperature hovers near 100°F and it's beginning to drizzle. You're on your hands and knees in leaf litter looking for landsnails, some the size of grains of rice. As field equipment, you've donned knee-high muck boots, a long-sleeved shirt, a hat, and enough DEET to keep the ever-present mosquitoes and marauding ticks at bay. Now in which of these situations would you prefer to find yourself? I have chosen the latter in an attempt to catalog the current distributions of Indiana landsnails.

The last statewide survey of Indiana's landsnails was completed by R. E. Call in 1989. Since then, the only significant

review of this fauna appeared in the literature in 1944. My recent work has been supported, in part, by the Indiana Department of Natural Resources and the U. S. Forest Service. At present I am committed to a preliminary survey of the Hoosier National Forest during the summer of 1992. Data from these surveys will provide important information on species presence, needed for stock conservation and for the protection of endangered animals. The U. S. Forest Service is especially interested in the potential use of landsnails as indicators of habitat quality. It is quite important at the present time to learn more about the condition of the molluscan fauna of the Hoosier State as agricultural and economic influences continue to impact populations of terrestrial invertebrate organisms.

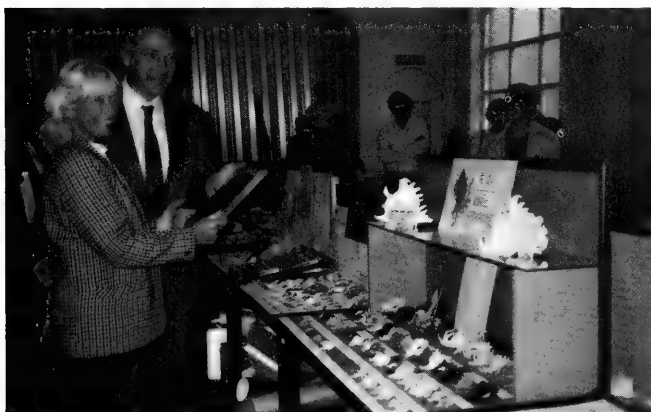
It is ironic that American conchology should have been born right here in Indiana. From approximately 1825 until his death, Thomas Say worked and studied out of the communal experiment of New Harmony, Indiana. So, we have a rich distant history of conchological investigation and a neglected recent past.

Historically, it has been natural populations of aquatic mollusks that have come under tremendous pressure in Indiana. The button industry had an especially important influence on the decline of natural stocks of large unionid bivalves. More recently, however, agricultural runoff from Indiana's farms has threatened the health of many small streams and their associated wetlands. The quality of Indiana's larger rivers has generally improved in recent years, due mostly to tertiary treatment of domestic waste, the pretreatment of industrial waste, and the application of new technologies to waste management practices in general.

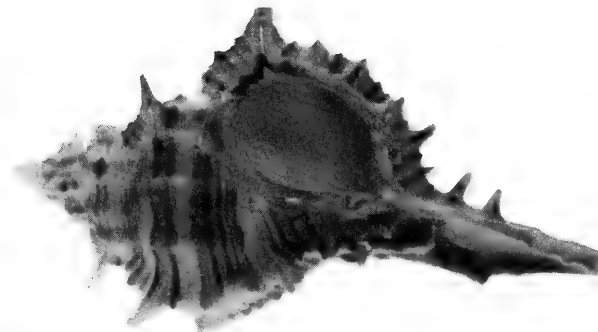
Indiana's smaller, agriculturally influenced streams are not doing as well. These tributaries begin degrading when 50% of the watershed is converted to cropland. It has recently been estimated that more than 65% of the state of Indiana is rowcropped. In addition, the Federal Government has sought to redefine what constitutes a "wetland." If they succeed, about half of the existing U. S. wetlands would be left unprotected. Landsnails are particularly abundant in these corridors which surround natural watercourses. As the size of these areas is reduced, populations of terrestrial molluscs will also decline. It is extremely important, at the present time, to learn more about these natural, native populations.

If there are COA members who might be able to assist me in my work, I would be very interested in talking with them. I am especially interested in landsnail collections and distributional data. I may be contacted at Wabash College, Department of Biology, Crawfordsville, Indiana 47933. Phone (317) 364-4260.

*Illustration is a montage of terrestrial gastropods from F. C. Baker's *Fieldbook of Illinois Land Snails* (1939, Illinois Natural History Survey, Manual 2. 166pp.).



Mrs. J. Saunders presents Noel Gregory with the COA Trophy for his exhibit on *Chicoreus* at the British Shell Collectors Shell Show, October 26, 1991.

**OOPS!**

Emily Vokes' photograph of the fossil *murex*, *Chicoreus* (*Siratus*) *chipolanus* (Dall) was printed much too dark to be recognizable in her article, "The Other Species of *Siratus* in the Western Atlantic," in the December issue. We're trying again here.



Judge Kevan Sunderland presenting a pleased Karlynn Morgan with the COA Trophy at the North Carolina Shell Show last October. Her exhibit was entitled "Shells you REALLY Have to Look For."



Moe Gouzwaard presenting the COA Trophy to Marion Magee for her exhibit, "Marine Miracles: A Sampling of Families." Marion won her COA Trophy at the 9th Midwest Regional Shell Show at Merrillville, Indiana, September 13-15, 1991.



Jake and Sylvia Dominey look very proud of that new COA Trophy they won at the Astronaut Trail Shell Show. Their exhibit, seen by over 1600 visitors to the show, featured cowries of the world.

LETTERS TO THE EDITOR:

In the last part of the 19th century, Kokichi Mikimota began his experiments that in this century led to the production of cultured pearls. Mikimota discovered that when spherical seed made of mother of pearl (nacre) was wrapped in a piece of mantle snipped from a pearl oyster and surgically inserted "close to the scallop on which the bivalve of the oyster hinged," a beautiful perfectly round pearl would form in about three years. Mikimota claimed that the pearl was formed by the oyster because the insemination of the mantle-wrapped seed irritated it.

In the Dec. 1991 issue of the **National Geographic Magazine** an article by David Doubilet says: "Pearls are not a natural part of a living oyster but a response to an irritation. They occur when sand or a bit of shell or an unwelcome parasite is trapped inside the oyster's shell. The oyster either expels the intruder or surrounds it with nacre — a silvery calcium carbonate substance that the oyster normally exudes to line its shell."

I doubt that the oyster makes a pearl because it is irritated. There must be a scientific explanation for this phenomenon.

The nacre, with which the inside of the pearl shell is lined, is identical with the nacre that covers the cultured pearl. It is the function of the cells in the mantle (and only the mantle) to produce layer upon layer of nacre inside the shell as it grows and becomes larger and heavier. When a piece of mantle tissue along with a spherical piece of nacre is surgically inserted into an oyster, the resulting pearl is merely evidence of the transplanted mantle cells continuing to lay down more nacre on the piece of nacre next to it. **The cells are genetically predisposed to do this.** Since the forming pearl is free to move in its cradle of mantle cells, it grows evenly in all directions, forming a beautiful spherical pearl.

The artificial insemination of an oyster with nacre seed and tissue from its mantle now gives predictable results, and although the surgical procedure may cause some irritation to the oyster at the time, nevertheless the pearl is formed because of the specific placement of tissue and seed in a safe place where the two can do their thing.

C. W. Miller
1154 Mountain Drive
Mobile, AL 36693

In his article, "The Operculum as an Aid to Classification" (Volume 19, No. 4) William F. Clendenin characterizes the operculum of the family Vermetidae as chitinous. While it is true that most of the described species in this family that are operculate have a chitinous operculum, two do not. They are *Dendropoma meroclistas* Hadfield & Kay, 1972 and *Dendropoma krypta* Gardner, 1989. These two species have a calcified operculum.

Sandra M. Gardner
1755 University Avenue
Palo Alto, CA 94301

Order your COA 20-Year Index today. Available by advance order only! See page 3, this issue.

Violet Hertweck, for many years a COA member, as well as a moving force and former president of the Sarasota Shell Club, died on December 16, 1991. She and her husband Charlie, who passed away four years ago, were avid fossil collectors, and Vi was also an extremely knowledgeable pecten collector and exhibitor. The shell community has lost a valuable member, and many of us have lost a dear friend.

ON THE REEF

by Bob Purtymun

Dive Log Entry:

Nov. 17, 1975 — Dive #1 — Snorkel 0-9 feet 90 minutes
Lauli'i, Tutuila Island, American Samoa

I was about to enter the *Turbo petholatus* capital of the Pacific. It was here, way back in 1942, that I found my first "cat's eye." I was a crewman on the USS *Crescent City*, AP1 21, an attack troop transport. We had come to Tutuila Island, American Samoa in late 1942 with a company of Sea Bees to set up a torpedo shop in Pago Pago Harbor to service our ships, planes, and submarines during the war.

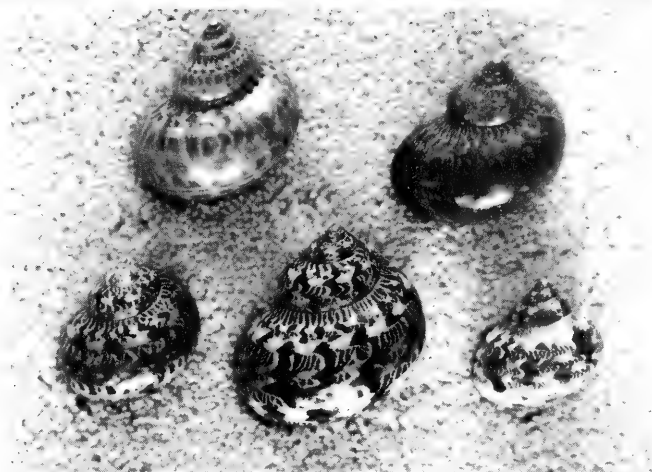
A few months later I bought a turtle shell necklace with matching bracelet in Suva, Fiji. By now I had enough Cat's Eyes to glue one on each segment of the necklace and bracelet. The glue was made by melting a tooth brush handle in acetone. I had acquired the acetone by virtue of being in charge of the medical laboratory aboard the ship.

But back to the "Turbo Capital." It is a lagoon about the size of two football fields placed end to end. The little village of Lauli'i serves as the side line on the north. On the east the goal line is Faataaga Point, and the other goal line on the west is a big pile of rocks. The side line on the south is protected from the open ocean by the fringing reef. In many places the sandy bottom is eight to nine feet deep with scattered patches of antler coral and a vigorous growth of seaweed. Also, large slabs of table coral have been carried over the fringing reef and scattered throughout the area by violent storms. Dead now, these slabs offer the perfect hiding place for many molluscs, including the *T. petholatus* Linné, 1758 that I was seeking. You might question why I was looking for this very common shell. First, it is quite pretty, with a wide range of colors. Second, it never has the crusty calcium deposits that cover many shells.

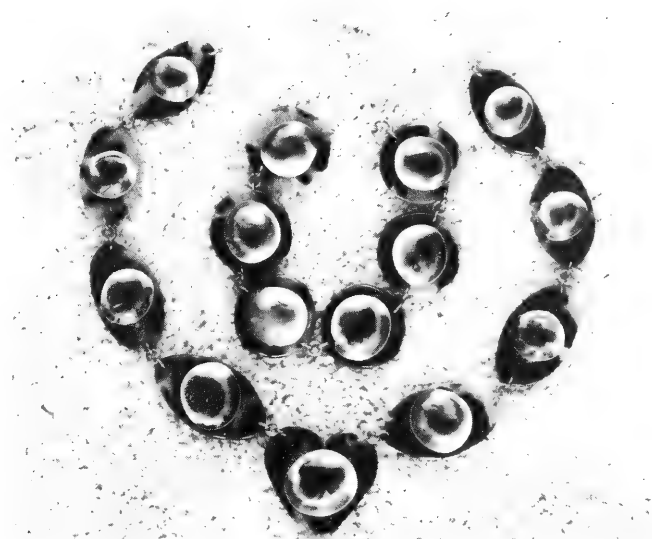
After about an hour's snorkel in the warm, clear water, turning slabs and dead coral heads, I returned to the beach with 23 *T. petholatus*. Sorting through my catch I picked out seven keepers in colors ranging from dark rusty-red to a molted greenish shade. I placed them in a plastic zip-lock bag and left it by my sandals and towel. The remaining shells went back into my goodie bag, and I returned to the lagoon. I dropped the culled shells into likely looking habitats as I finned on out to the leeside of the fringing reef to look for that giant *Conus tulipa* Linné, 1758 that I needed for my collection. It was in this type of habitat that I found my 5" + *C. geographus* Linné, 1758. (Tell you about that one another time.) Both of these molluscs are fishermen. They come up out of the cracks and crevices of the reef at night to fish for gobies. I have watched by keeping the main beam of my dive light off the action. The mollusc would crawl slowly across the reef top, and as it approached a fish, its proboscis would extend until it touched the fish. **Zap!** After a few futile attempts to pull free the fish would be drawn into the mollusk's flaring buccal cavity. Sometimes the fish would be almost as long as the shell.

A half hour of fruitless searching later, I gave up and finned back to the beach where I found a smiling Samoan gentleman sprawled by my gear. As I pulled my fins off, I noted seven Cats Eyes neatly arranged on my towel. The Samoan people are always helpful. He had done just what the Samoan women do when they are looking for shells for jewelry. Smashed the shells with a rock, eaten the meat, and carefully saved the opercs.

The demand for the operculum for jewelry has put serious pressure on this mollusk. Now it is seldom seen in areas where it once was common. I have never had the opportunity to replace the color forms that I lost to a healthy Samoan appetite on this dive.



Turbo petholatus Linné, 1758. Top two from Zanzibar; bottom two left from American Samoa; bottom right from Philippines.



Turbo petholatus opercula on turtle shell — still shiny after almost 50 years.

REQUEST FOR ZEBRA MUSSEL INFORMATION

One of the major conservation issues in North America is the spread of the zebra mussel, *Dreissena polymorpha*. Originally introduced into North America in the vicinity of Detroit, *D. polymorpha* has spread to many locations in the Great Lakes system, and has recently been reported from the Illinois River. Immediate concerns include the spread of this species throughout much of the Mississippi River basin. The U.S. Fish and Wildlife Service has recently designated the National Fisheries Research Center in Gainesville, Florida, as their official compiler of information on the spreading distribution of *D. polymorpha*. This lab was chosen because of its existing national focus on exotic fish distribution. Their existing Geographic Information System (GIS) database is as useful for aquatic mollusks as it is for fish. This lab is interested in all observations of *D. polymorpha*, even records of dead shells. Please send information (minimum of date of sighting; observer's name and address, and phone number; detailed locality information; and details of observation) to Charles P. Boydston, GIS Coordinator, National Fisheries Research Center, 7920 N.W. 71st Street, Gainesville, FL 32606.

— from the Report from the AMU Conservation Committee, AMU News, November, 1991.

BOARDTALK. . .

From **Treasurer, WALTER SAGE**: Membership dues for 1992 have been coming in regularly. However, we still have about 350 members who have not paid for 1992 and therefore will not receive this March issue. Please encourage all your COA friends to be sure they are 1992 members. We will be contacting those not yet paid, and hope to receive dues from the currently delinquent members soon.

I have completed and mailed to COA officers and chairpersons the final report on the 1991 Long Island COA Convention. Anyone wishing to receive a copy of this report and the financial reports for the convention should contact me.

We have received word that our Long Island "friend" Ed Theiler has moved to Sarasota, Florida, and is now using the name "Ed Rogers," or sometimes "Walter Rogers." Beware of anyone you don't know who wants to buy, sell, or trade shells.

The supply of COA lapel pins purchased in 1985 is now completely exhausted. We are in the process of purchasing new pins and advise anyone interested NOT to send me money, but to wait for notification that new pins are available. Monies received for pins will not be accepted, but will be returned until pins are actually available again for sale.

1991 Long Island Convention T-shirts are available as follows:

Medium — 2 gray, 1 each blue, green (\$10 postpaid); X-Large — 5 green (\$10 each); XX-Large — 1 each blue, gray (\$11 each postpaid). Please help us give these beautiful shirts happy homes. We expect that new shirts will be available at the July Jacksonville convention.

Past-President HANK FOGLINO reports COA member Mathilde Duffy, at the invitation of the Board of Directors, will be designing a new COA pin. When this step is complete, bids will be solicited from several pin manufacturers. The present goal is to introduce the new pins at the Jacksonville Convention in late July. Always busy, Hank is also engaged in the planning of a slide presentation entitled, "What is the COA?" for loan to interested groups.

From **Membership Chairman Bobbie Houchin**:
Effective March 1, 1992:

BACK ISSUES PRICE INCREASE

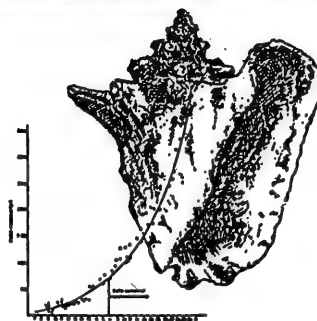
New prices for back issues of the *American Conchologist/COA Bulletin* are as follows: issues prior to 1985 are now \$1.50 each; issues from 1985 to current are \$3.00

The COA Board of Directors approved this price increase because out-of-print issues must be copied to fill orders for them, and because postal rates have increased two times in the past two years. Note that these rates are permanently posted under "Membership" in the masthead, p.2.

SECOND INTERNATIONAL SHELL SHOW IN BELGIUM

After a very successful first International Shell Show, the Belgian Society for Conchology is encouraged to try it again: the Second International Shell Show will be held at the Damian Institute, Aarschot, Belgium on May 10, 1992. For information contact Belgian Society for Conchology Secretary, Robin De Roover, Vorsterslaan 7, 2180 Ekeren, Belgium. TEL: 03/644.34.29.

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FIRST LATIN AMERICAN CONGRESS OF MALACOLOGY

by *Roberto Cipriani*

The Universidad Simon Bolivar (USB) was host to the first Latin American Congress of Malacology, held at Caracas, Venezuela, July 15-20, 1991. Organized by the Institute of Technology and Marine Sciences (INTECMAR), the Los Roques Scientific Foundation, the University of Puerto Rico at Mayaguez, and the Venezuelan Society of Malacology (SOVEMA), the Congress featured two symposia and one workshop. These dealt with Applied Malacology, Basic Malacology, and Biology and Management of *Strombus gigas*, respectively.

One hundred seventeen abstracts were received from researchers of Latin America, United States, the Netherlands, Spain, Italy, Great Britain, and the Lesser Antilles, published in Spanish, Portuguese and English. About 170 attendees enjoyed 90 talks, 9 posters and 10 conferences on freshwater, marine and fossil mollusks. Several shell collections were also displayed in the exhibits area of the recently founded Museo de Ciencias Naturales de la Universidad Simon Bolivar. These collections had been loaned, exchanged or donated by researchers from various Latin American marine science institutions. Shell photographs from the Museo del Mar, Isla Margarita were also on exhibit.

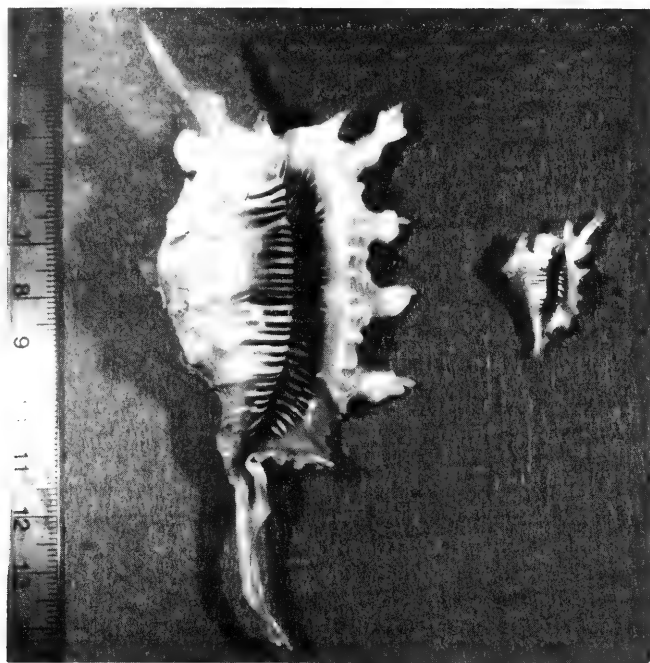
During the Congress, a steering committee for future Latin American Congresses was appointed, with M.Sc. Martha Reguero Meza and Dr. Antonio Garcia Cubas of the UNAM, Mexico as President and Vice-President. The next Congress will probably be held in two or three years, in Mexico.

Eugene Coan, Donald Moore and Melbourne Carriker, U.S. malacologists, were instrumental in assisting and publicizing the Congress. A final major proposal was to create a semi-formal, north-south institutional link between Latin American and U.S. researchers and institutions. They hope to exchange literature specimens, ideas, visits and resources and to conduct joint projects to the benefit of the malacological science of both hemispheres.

*Intecmar — USB, A.P. 89.000, Caracas, 1080, Venezuela



One of the exhibits from the First Latin American Congress of Malacology, showing molluscan animal models in life positions.



Dwarf *Lambis scorio* and Friend

Don Pisor, proprietor of the La Jolla Cave & Shell Shop, obtained this dwarf *Lambis scorio* from a fisherman on Mactan Island in the Philippines while visiting there in 1990. The dwarf was collected "riding" on the larger specimen in this picture.

MUSEUM SHIPS SCHOOL SHELL KITS

On October 25, the Bailey-Matthews Shell Museum mailed its 100th School Shell Kit in its project to provide instructive collections of shells to requesting schools nationwide. To date, requests for the kits have come from 25 states and Canada.

The idea for this unique educational project came from Dr. R. Tucker Abbott, acting director of the Shell Museum, planned for Sanibel. In early 1991, Elsie Malone donated her inventory of specimen shells to the museum. In possession of thousands of excess specimens, Abbott conceived the idea of providing collections to schools, while retaining for the museum the shells needed for identification and display.

Next step was to acquire funding and volunteer help. Sanibel residents Sam and Gertrude Ford agreed to both fund and administer the project. With the help of friends, the Fords set up a processing center in their garage, Abbott wrote the teacher's guide, and the School Shell Kit effort was off and running. On April 11, 1991 the first kit was assembled and mailed to a school in Illinois.

Each kit includes a Teacher's Guide, a Golden Nature Series Shell Guide by Abbott, scientifically correct shell labels, and 40 to 50 species of mollusks to help school children better understand the environment, ecology, and the world of the sea. The value of each kit is estimated at \$50.

As the supply of shells has dwindled, additional donations have come in from members of the Sanibel-Captiva Shell Club and the Smithsonian Institution. Ede Mugridge has loaned the use of the cottage on her property for storing and packing the kits, so the Fords can use their garage again.

If you wish to request a collection for a specific school, write Sam and Gertrude Ford, 813 Angel Wing Drive, Sanibel, FL 33957. Be sure to include a \$10 check made out to the Bailey-Matthews Shell Museum to help defray processing and shipping costs.

VENOMOUS *CONUS* — BACK IN THE NEWS!

by Jean Cate

Just as we thought we knew all there was to know about "poison cone shells," and had filed away in our memory banks some 35 years of slide shows portraying these animals shooting lethal darts into helpless gobies*, they have surfaced again from a totally different direction — not in malacology, as one might expect, but in molecular biology. Malacologists have long understood that human victims of any of a half-dozen piscivorous species of the *Conus textile* complex suffer violent death, paralysis, or painful wounds. We knew that this small, closely-related group of mollusks inhabits shallow tropical waters where their prey fish (and humans) occur; we knew that these species possess venom sacs from which they eject toxic darts into prey to obtain food — and that was about it.

So, what does Cate know about molecular biology? Precious little, to be sure — but it seems important to pass along what I've learned to fellow friends of the Conidae. Here's how the story reached me (and you'll note that my source of information is unimpeachable): recently I attended a small luncheon at the Whittier Institute, a foundation dedicated to research in diabetes and endocrinology, and an important adjunct of the huge new medical complex at Scripps Memorial Hospital (La Jolla), where I was given an eye-popping tour of the Institute's superb research laboratories.

During the luncheon I became acquainted with Nobel Laureate Dr. Roger Guillemin, neurological biologist and Distinguished Scientist at the Whittier Institute. A charming gentleman with a special talent for making molecular biology fascinating, he described the extraordinary work he and his colleagues are doing in diabetes research. Among other wonders, they have discovered a significant molecule which appears to project a possible cure for diabetes — or perhaps a way to prevent it. There may soon be a means of predicting diabetes in newborns.

When Dr. Guillemin learned of my interest in malacology, he had another molecular surprise for me. With the power lunch nearing its close, he told me that he likes to add new specimens to his grandson's shell collection, but cannot always recall their names; he asked the name of the small, elongate mollusks known for their toxic effect in humans. We know there's only one answer to that: "a few fish-eating species of the Conidae." Then came his astonishing announcement: **a molecule in the human brain has been identified as an exact match with a molecule present in cone venom**, though its specific function there is still unknown.

That's heady stuff. Without question, molecular biology has taken the lead in *Conus*-toxin study; the deadly mollusk is back in the news again, but this time research is proceeding at warp speed, not its former snails' pace. Within my lifetime, I hope to learn not only that help is available for diabetics, but also that a beneficial product has been found in *Conus* venom which can be replicated safely, easily, and economically in the laboratory. Further, I can't wait to hear what purpose the newly identified molecule serves within the human brain and, in turn, where **that** knowledge may lead! It could go in any direction; let's pray it will follow a course helpful to humankind.

Remember — you saw it first in **American Conchologist!**

*A "goby" is a tiny blind fish with a name longer than itself (*Typhlogobius spp.*).

I thank Dr. Larry Scott of the Scripps Foundation for arranging a very special afternoon; Donald Shasky, M.D., for advice; and especially Dr. Roger Guillemin for the privilege of reporting his observations.

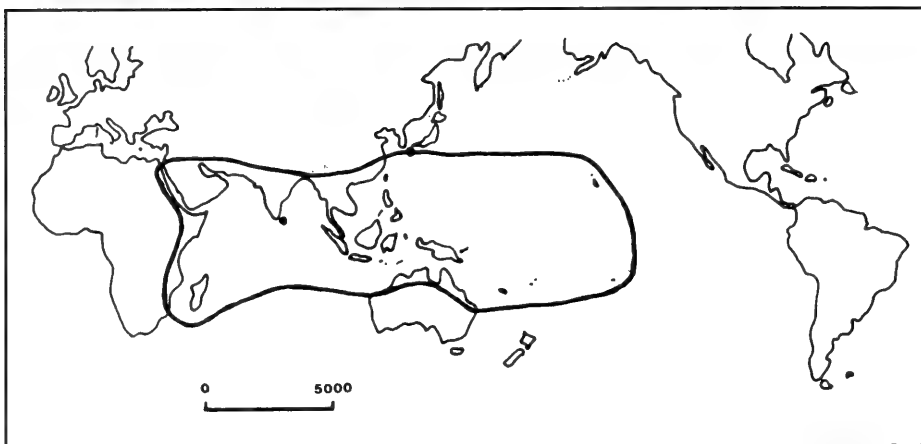


Fig. 1. The distribution of the marine shell *Harpa amouretta* covers tens of millions of square kilometers of the Indian Ocean and the tropical Pacific. In such a situation, a local extinction will be restored naturally by the influx of larvae descending from healthy populations elsewhere.

EXTINCTION AND PRESERVATION OF SPECIES IN THE TROPICAL WORLD: WHAT FUTURE FOR MOLLUSKS?

by Philippe Bouchet

Muséum Nationale d'Histoire Naturelle, Paris

Mollusks constitute, in numerical importance, the second largest animal phylum on the planet. Their diversity is estimated at about 100,000 species. Of course, this figure is absurdly low when compared to the variety of the Insects, estimated between 9 and 90 million species! However, insects are essentially a continental group (there are no marine insects), while the reverse is true for mollusks; three quarters are marine species and one quarter are land or fresh water species. Mollusks are present from the deeps to the deserts; they have colonized the underground waters, the mountains, and the arctic seas as well; some species are phytophagous, others are carnivorous or parasitical.) This diversity shows that their ecological and biological malleability enable them to settle in every environment. Well, nearly every environment — no flying mollusk is known!

In the next pages I will attempt to review the specific threats to mollusks which may lead to their extinction. The enumeration of these specific threats must not cause us to forget that, as is true for any element of an ecosystem, mollusks are equally and chiefly subject to the general threats which nowadays hang over all living species: clearing of land, erosion and damage to habitats, pollution, and urban and industrial development.

The tropical zones are the richest:

As for the great majority of living organisms, the biological richness of mollusks is maximal in the tropical zones. Whereas the total number of marine molluscan species does not exceed 100 or so in Spitzberg, this figure reaches 800 species in the Bay of Biscay (coast and continental shelf), and peaks with 6,000 species in such areas as the Philippines, Indonesia or New Caledonia. The same approximate situation exists as far as the land faunas are concerned; there are more than 250 species of snails and slugs for all the British Isles (315,000 sq. km.), but Cuba, with 110,860 sq. kms, shelters at least five times as many, and the Hawaiian Islands, with only 16,760 sq. km. have more than 1,400 species. Parallel to this quantitative diversity, the tropical zones are noteworthy for the ecological and biological

diversity of their molluscan fauna; some ways of life cannot be found anywhere else. For example, the arboreal way of life among snails does not exist in the temperate zones with their deciduous trees, whereas it is very considerable in the rain forest. Among the marine faunas, several families of tropical species feed upon sponges, others on gorgonians, while still others parasitize echinoderms; these ways of life are nearly unknown

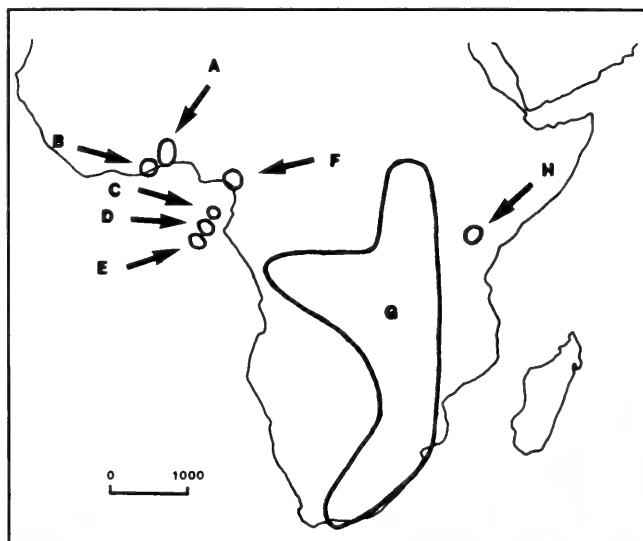


Fig. 2 This distribution map of eight tropical African snails belonging to the genus *Dendrolimax* gives a good idea of the situation often encountered in land species. One single species (G) has a distribution range covering several million square kilometers. The others are endemic to the islands in the Gulf of Guinea (C, D, E) to isolated forest massifs (A, B), or to mountainous areas (F, H); their distribution range is estimated in hundreds of square kilometers. In such a case a local extinction most often means an extinction pure and simple; there is no spare population. (after Van Goethem, 1977)

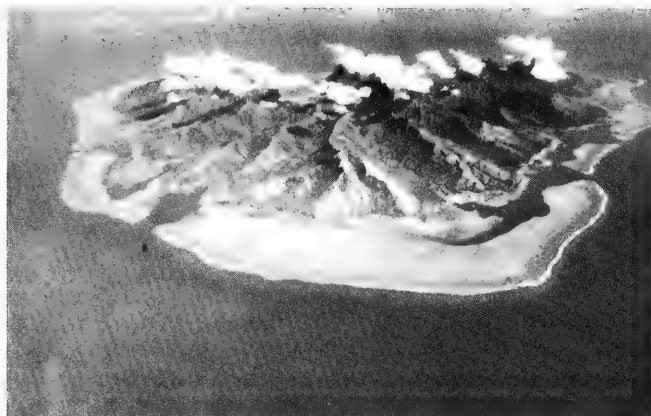


Fig. 3. The Polynesian island of Moorea still represents, in the European imagination, a South Seas paradise. And yet at least 4 species of land snails have become extinct since 1980, at the hand of man. South Seas paradises have the highest

from the cold zones. Generally speaking, interactions between organisms (parasitism, commensalism, symbiosis) are far better developed in tropic environments. There the ecosystems are more complex and the ecological niches are narrower.

Of course these general observations do not apply only to mollusks. They merely enable us to describe the diversity of tropical molluscan faunas — a richness 4 to 10 times higher, per surface unit, than exists in the temperate zone; a greater specialization of ecological niches, making species more vulnerable to modifications in their environment.

In the "hit-parade" of tropical zones, the following areas are noteworthy for the diversity of their faunas. Among the marine faunas: the Western Pacific Ocean, from the Philippines to Indonesia, New Guinea, the Great Barrier Reef and New Caledonia, is ranked first. The Indian Ocean, the Eastern Pacific Ocean and the Caribbean can be ranked second. Lastly, the Central Pacific Ocean and West Africa are less rich in species. So far as the land species are concerned, all the tropical mountain forests and islands are huge pools of biological richness. As such, the big ancient islands of Madagascar, New Caledonia, the whole of Insulindia (the Philippines, Indonesia and New Guinea) and the

Greater Antilles (Cuba, Hispaniola, Jamaica) are particularly noteworthy. On the other hand, Amazonia, whose botanical lushness causes much ink to flow today, does not have a first rank molluscan fauna.

Marine species: green light; terrestrial species: orange light:

A fundamental difference separates the marine and land faunas — the extent of the species distribution ranges. The marine environment is essentially continuous; the seas and oceans which separate the continents and isolate the islands are, conversely, the unifying factor for marine faunas. Moreover, the marine environment is an extremely stable environment in which local climatic variations are largely absorbed by the huge oceanic expanse of water — it stands to reason that air gets warmer or colder more quickly than water.

So far as marine faunas are concerned, the main consequence is that the great marine biogeographical marine have nothing in common with terrestrial biogeographical areas. Four great provinces are recognized in the tropical marine environment. The immense Indo-Pacific region covers the whole tropical Indian Ocean and the entire Western and Central Pacific Ocean — from the coasts of East Africa to Hawaii and Easter Island, along the shores of China and Australia, the common, basic fauna is the same. The other three great Tropical marine zones are the Panamic Province (from the Gulf of California to Peru), the Caribbean Province (from Florida to the middle of Brazil), and the West African Province (from Mauritania to Angola). Although far smaller than the Indo-Pacific Province, they still cover thousands of kilometers of coastlines. Thus marine molluscan species are distinguished, when compared to land species, by their extremely wide distribution range: for marine species, the unit of measure is a million square kilometers, or perhaps even ten million. The distribution of *Harpa amouretta*, which ranges from Mozambique to Hawaii (fig.1) can even be measured in the hundreds of millions of square kilometers.

On the contrary, insofar as land mollusks are concerned, the distribution ranges are estimated most often in the tens of thousands of square kilometers, and sometimes in the hundreds of thousands. The species endemic to the ancient islands mentioned above have even smaller ranges: there, species are endemic to a mountain massif, a sierra or a valley, and their range covers, at most, a few dozen to a few hundred square kilometers.

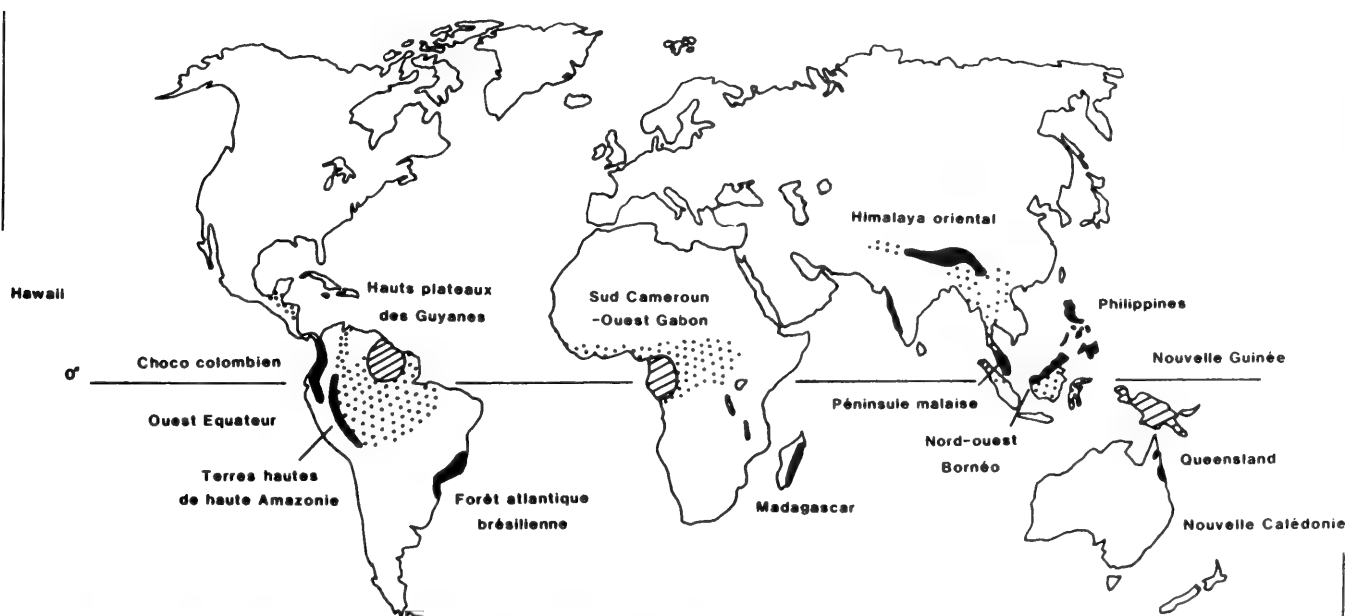


Fig. 4. Norman Myers, environmental specialist, acknowledges ten "black spots" on the surface of the earth, zones where the forest cover is particularly rich in endemic species, and is rapidly disappearing (in black). It is likely that these areas also know an alarming extinction rate of their molluscan faunas. The diagonal shading corresponds to areas where the danger of extinction is relatively low. The dotted areas represent other rain forests. (after N. Myers)

From the preceding facts, it ensues that land and marine mollusks are not threatened in the same way. Generally speaking, marine species are not threatened; a local extinction, whether it results from pollution, development, or overcollecting, does not lead to the extinction of the species. At worst, a small percent of the range is affected, and somewhere in those million square kilometers of ocean expanse, healthy habitats and populations remain in reserve to perpetuate the species. On the contrary, land species are more subject to local extinctions, which often means total extinction — for the species, **there is no reserve population**. A local imbalance quickly turns into a disaster: the clearing of Mangareva Island (French Polynesia) during the 20th Century led to the extinction of several dozen species of endemic snails, even though there were never more than a few square kilometers of habitat in the entire region.

Without minimizing the long term importance of the destruction of the quality of so many local marine environments, we must conclude that nowadays the 25,000 land molluscan species are infinitely more threatened than the 75,000 marine species. Moreover, at present, no marine species is extinct as a result of human activities, whereas there are hundreds of extinct land species.

Shell collecting:

In the mind of the general public, mollusks are often the same as their shells, that is to say, collectible objects of astonishing shapes and colors. These specimen shells are the visible part of the "molluscan iceberg." Fewer than ten families are intensively collected, the same ten since the 18th Century. Cypræidae (200 species) and Conidae (600 species) monopolize the interest of 90% of the collectors, followed by Volutidae (300 species), Strombidae (conchs and spider conchs — 25 species), Harpidae (40 species), Terebridae (200 species), Mitridae and Costellariidae (the miters, 400 species). Thus fewer than 2,000 species from a total of 75,000 marine species, can be called "shells" — not many. Like every collector's item, the shell has a value, a cost. As with any sort of collectible, this cost fluctuates with supply and demand. A rare cowry, member of an intensely collected family, will have a much higher valuation than an equally rare member of the Terebridae, a family which is not much collected.

A few figures can help us imagine the importance of the market. In France, 400 shell collectors are grouped into an association — not a large number, but at least six of them are professional shell dealers. Big annual shell fairs take place in Switzerland, Germany or France, drawing hundreds of collectors from several countries for a single weekend. In Italy, 2000 copies of a large quarterly shell magazine are distributed. In the United States, there are dozens of clubs, and the least of their newsletters publishes the ads of many professional dealers. The Société Internationale de Conchyliologie, based in Switzerland, has recently estimated at 12,200 the number of shell club members throughout the world. This number, of course, only includes the collectors who are obsessed enough to adhere to an association structure and pay dues.

Most collectors satisfy their need for shells by purchasing or exchanging within their country of residence, but some take advantage of their vacations to make "thematic" trips to "self-collect" the material for their collections. Shell club newsletters always contain trip reports which tell the multitudes about the havens of peace which have been spared till now: shells, exoticism and dollars. . . .

Well-informed collectors claim to be very selective, fishing only perfect, flawless, chipless shells, and throwing back in the water all other specimens so that they may propagate and protect the species. Maybe a small number of collectors follow this practice, but everyone has also heard the stories about servicemen who bring home shell-laden trunks after a three-year stay in the West Indies or the Pacific. Certainly conchology is not as big a market as numismatics, but a few figures can help quantify it: a rare cowry, known from less than 30 specimens, can bring

\$10,000, and a rare cone may sell for \$1,500 to \$2,500. Below that level, many items are valued between \$50 and \$500. Thus one can easily understand the covetousness excited by a beautiful, healthy reef with its shell fauna intact; nobody, western tourist or poor Filipino fisherman, will give up a \$200 shell!

Even so, in spite of this intentionally oppressive picture and of sometimes destructive individual behavior, we must acknowledge that nowadays shell collecting is not directly responsible for any extinction of a marine shell.

In my opinion, the chief current threat to the marine mollusk is the souvenir shell craft trade. You know, those big shells from the West Indies painted with "Souvenir of Cape Cod. . ." those cowries, murex or giant clams sold by the ton in Papeete, Honolulu or Florida, even those shells which, shaped, are destined to become "pukas" or "capiz" and to be exported worldwide.

Concerning this shell trade by the ton, there are no general statistics at all. But it is sufficient to see the warehouses of some Filipino enterprises, employing up to 50 workers, to understand immediately that the problem is of a higher level than that occasioned by the specimen shell trade; the Philippines alone exported as much as 4,000 tons of shells per year until the early 80's and the current figure is 1,000 tons per year. It is obvious that the world souvenir market for crafted shells involves tens of millions of potential buyers, as compared to several thousands of true collectors. And indeed these are common species which form the matter of this commerce; we must acknowledge that these harvests do not endanger any species: they still remain — but how long can they last, those reserve populations mentioned above? It's rather the general slaughter which we must denounce, in which all individuals, the juveniles and the ugly ones, are systematically fished: no care is taken of the fragile specimens and profits are expected more from quantity than quality.

In areas with strong economic and demographic pressure, shell fishing goes along with food fishing, aquarium fishing and coral collecting. Fishermen use methods that are ever more traumatizing in their effect on the already weakened reefs, until they reach the point of no return — in certain areas of South East Asia, fishermen use dynamite!

Massive extinctions in land faunas:

Madagascar, New Caledonia, Jamaica: the big mountainous tropical islands have in common the possession of an outstandingly varied biological patrimony which cannot be found anywhere else on the planet. The native fauna on these big islands show endemism rates which are generally above 80% and can reach 100%. Relatively speaking, small tropical islands such as Hawaii, St. Helena, Rapa and Mangareva have biological patrimonies which are every bit as irreplaceable.

The island ecosystems are known for their malleability; the list of island birds which are already extinct because of man is already a long one. The history of the human peopling of every archipelago, every island, is too specific to allow, in this short space, a review of all the threats which hang over all the island snail faunas.

Without oversimplifying, we can assert that the pressures of population and tourism, leading to the destruction of natural areas, is far more devastating than the industrial pollution which we immediately think of in the temperate zone. The human population in density on Mauritius is 536 per square km., 253 per square km. in Sri Lanka, 200 per sq. mi. in Haiti (as a matter of fact, 100 inhabitants per sq. km. in France).

On the continents, the clearing of the Colombian Choco, the coastal zones of Brazil, and the Malay Peninsula causes dozens of molluscan species (and thousands of other invertebrate species with them) to disappear before ever being collected, listed and named. For all these anonymous species, there is no registration in a "Red Book" of the endangered species, no inscription in an appendix to the Washington Treaty, no rescue or protection campaign. . . .

To give an idea of the importance of these extinctions, I will



Fig. 5. An unnamed Urocyclidae of the Guinean forest massif: most land snails do not interest collectors, and the destruction of habitats is the main cause of extinction. (Photo H. Chaumeton)

give a few figures. During the Pliocene (1 to 5 million years ago), the extinction rate of the freshwater molluscan fauna of North America has been estimated at 7 species per million years. By contrast, from 1876 to 1977, 56 mollusk species died out in the U.S., that is to say 0.56/yr. In Hawaii, the land mollusk natural extinction rate was about 1 species/million years before human settlement; the Polynesian settlement there caused this to rise to 1 species/century; and lastly, since 1778, when the archipelago was discovered by the Western World, the extinction rate has been roughly 3 species/year. The total world number of extinct mollusks already reaches several hundreds (including 65% of the Hawaiian fauna and 30% of the fauna of Mauritius), but thousands of species have not been seen again in 50 or 100 years.

Incidentally, the world number of tropical molluscan specialists is so low that there is every chance that an extinction may go unnoticed.

The introductions, plague of the island faunas:

The pure and simple destruction of habitats is not the only threat to hang over land faunas. Moorea Island, in French Polynesia, continues to see a picture of heaven on earth. And yet, since around 1980 no less than 7 snail species endemic to Moorea died out. How did it happen? The story begins in 1967 with the introduction, intentional or accidental, of the giant African snail, *Achatina fulica*, in Tahiti. From Tahiti, the achatinas quickly reached the other islands of the Society Archipelago. Then a classic scenario occurred: the achatinas went through a demographic boom, attacked food-producing crops, and became an agricultural plague. Next, a well-intentioned Farming Department began a "biological fight" by introducing *Euglandina rosea*, a snail-eating snail, to get rid of the achatinas. *Achatina fulica* comes from West Africa, and *Euglandina rosea* is from the Southern U.S.A. and Central America, so of course there is no food specificity between the two species. The result was quick to follow in Moorea. In a few years, *Euglandina* reached all the valleys of Moorea, settled in the natural forests, and ate the seven endemic *Partula* species; the last Moorean *Partula* species in nature was seen in November, 1986.

Meanwhile, the *Achatina*, after the initial phase of demographic boom and independent of the *Euglandina*, have developed lower population densities; still present in the crops, they

are still a plague. The result: a total failure in relation to the initial economic goal, and an ecological disaster in Moorea and the other Society Islands. Six of the seven *Partula* species still survive in captivity because, luckily for them, they formed the subject of population genetics studies, and were closely observed in the field by a team of scientists. Most species are not that lucky and die out in the most complete anonymity. The saddest part of this is that the appalling result could have been avoided — in Hawaii, the same sequence of ecological disasters had already led to the extinction of 20 *Achatinella* snail species on Oahu Island alone. In spite of this, the Agricultural Departments of many Pacific Island States intentionally introduced *Euglandina rosea* in many islands and archipelagos during the 70's and 80's. For several years now, a strong U.I.C.N. campaign has tried to make the responsible authorities sensitive to this problem. Unfortunately for many islands, it is too late: the 4 endemic *Partula* species of Tahiti remain in only two valleys, and the territory of *Euglandina* increases every year. The "worm" has already attacked the "fruit" in other paradises: New Caledonia, Vanuatu (ex. New Hebrides), Fiji, Guam, and others.

What to do?

The preservation strategies for invertebrate species must be different from those protecting vertebrate species. There are simply too many species, too few specialists, too little awareness among the general public, even the educated segment, to be able to preserve, in captivity the tens of thousands of species of mollusks and insects which are endangered today. Thus the preservation of habitats is the only solution to safeguarding the immense majority of invertebrate species. It is important that the specialists in vertebrate conservation understand: the mascot animals, e.g. the panda, the tiger or the koala, must be a pretext for protecting the great natural spaces. By ensuring their survival, they will also ensure the survival of thousands of plants and smaller animals. Were the panda, the tiger or the koala to survive only in zoos, the preservation action would have failed, in my view, in the main part of its mission.

Big vertebrates usually need reserves covering dozens to hundreds of square kilometers in order to maintain reproductive populations. On the contrary, invertebrates can maintain viable populations in scraps of natural vegetation covering not more

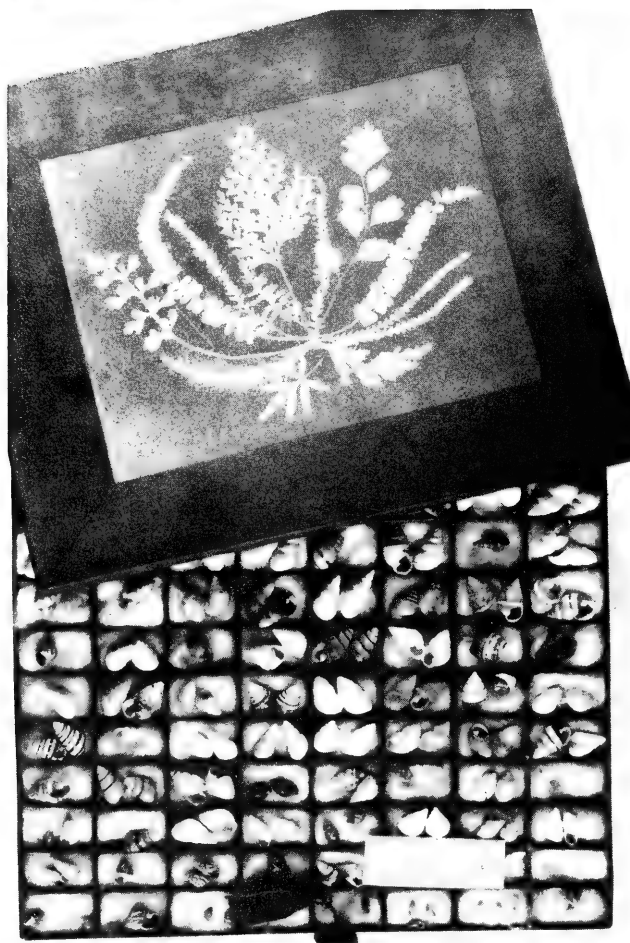


Fig. 6. The Hawaiian achatinellas suffered much from excessive collecting by resident naturalists in the late 19th Century. There are many species, every one with many color forms, and achatinella collections were very fashionable from 1860 to 1900; this collection, assembled by M. Baillieu in 1877, is kept in its original display. (Photos P. Lozouet)



Dr. Rodolfo & Julia Santiago
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Caracas, Venezuela
I exchange *Voluta musica* and other shells
from the Caribbean Sea for sea shells.

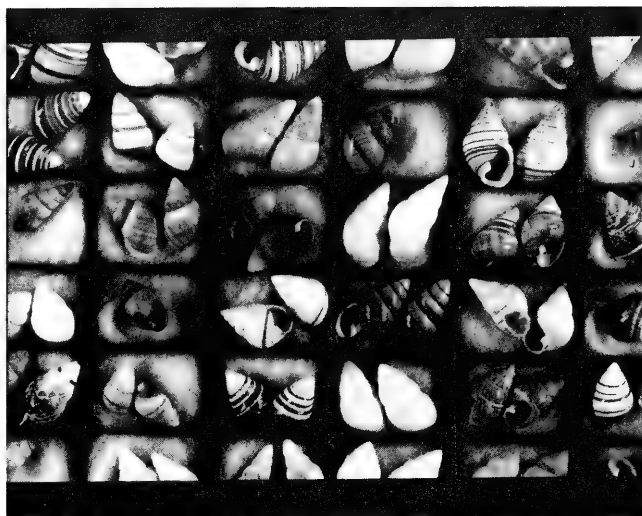


Fig. 7. The endemic *Partula elongata* from Moorea, now extinct.

than a few dozen or a few hundreds of hectares. Usually, such scraps still exist in islands where, from the 18th C. til now, birds and reptiles have disappeared; deep valleys and abrupt cliffs often contain the ultimate evidence of these native flora and fauna. Today preserving these very scraps must be a priority.

As for the rest, the economical, political and cultural causes of the degradation of tropical environments are known. If the invertebrates alone constitute 98% of the biological diversity of the earth, their protection is nothing but a drop in the ocean of needs, emergencies and priorities which governmental and private organizations must face.

To know more about it:

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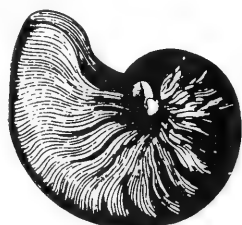
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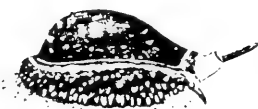
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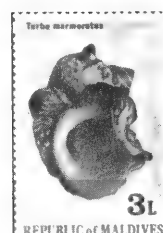
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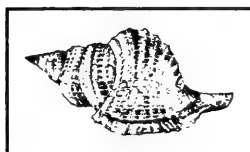
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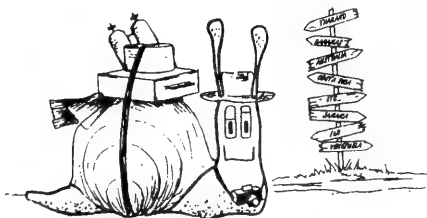
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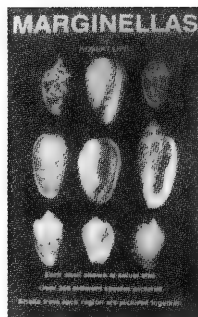


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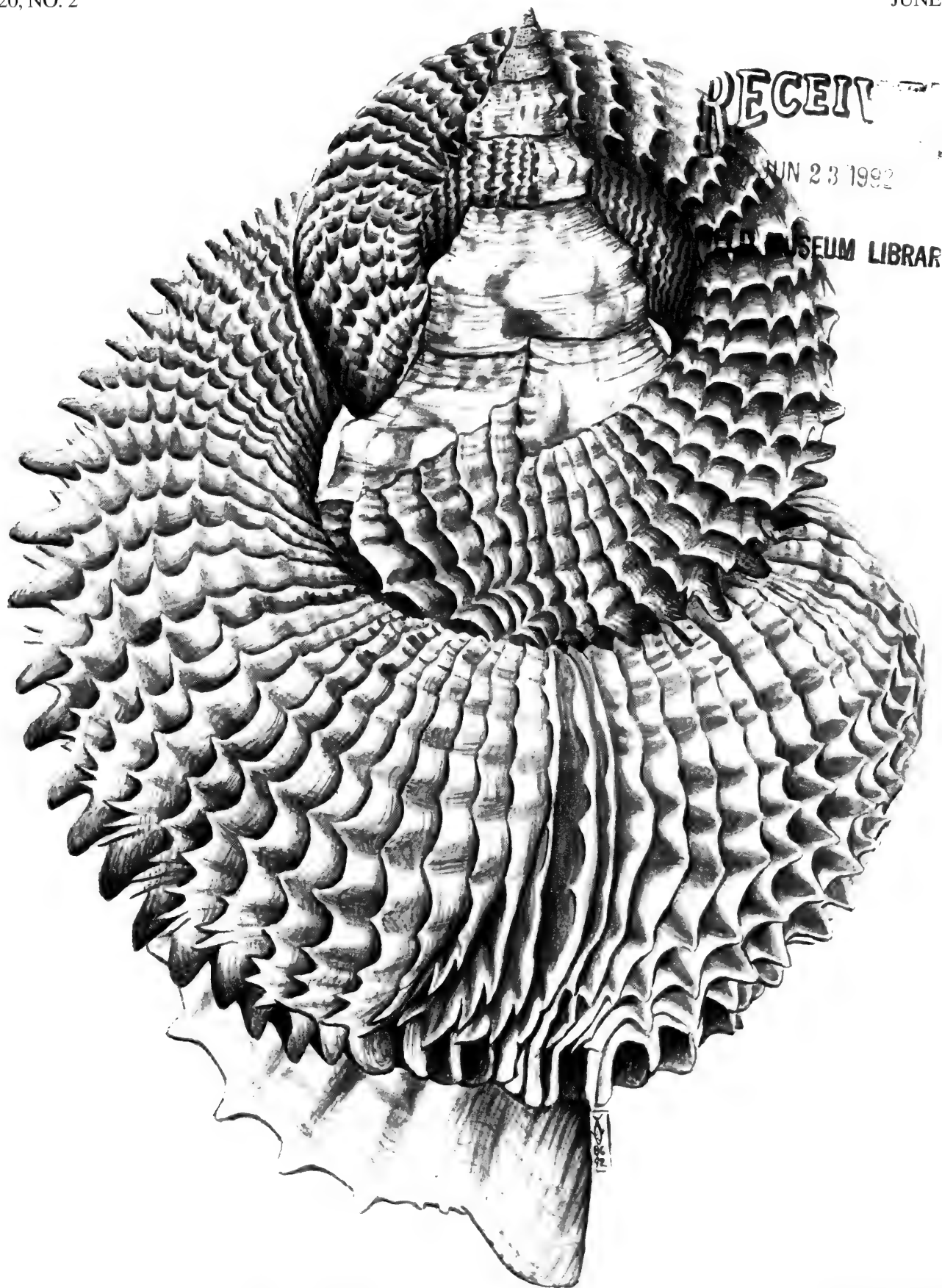
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AMERICAN CONCHOLOGIST

QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 20, NO. 2

JUNE 1992





CONCHOLOGISTS OF AMERICA, INC.

**A Collective Devotion To
Advancing-
Conchology.**

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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MEMBERSHIP

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COVER: John Timmerman again conjures up the impossible from his talented pen and brush. This time a *Charonia lampas* (Linné, 1758) is wound in a reptilian coil of its own varices gone wild.

**NEW CONSTITUTION
AND BY-LAWS DRAFT APPROVED
Effective June 1, 1991**

PRESIDENT'S MESSAGE

Time passes fast when you are having fun. Maybe that is why this has seemed to be a short year. Your Executive Board and Committee Chairmen (now, under the newly revised Constitution and By-Laws, the Board of Directors) have been pulling together as a team, have been working hard, are dedicated to their tasks and are supportive of each other. I cannot thank them enough and praise them enough.

This has been a year of new beginnings and new things — new Constitution and By-Laws, new Guidelines for each office, new COA pins and T-shirts, new Shell Club memberships, a new COA Convention Host, new members and a few new problems to be solved.

The Convention in Jacksonville, Florida this July is shaping up to be the best yet. If you have not already made a decision to go at this late date, get off the fence and join the fun.

There is not enough space for your president to say all he would like to say, but let's look at our membership briefly. By taking a look at our COA roster and doing a little "bean counting," one can determine several facts and estimate others. The COA has well over 1200 U.S. individual members (and fortunately, we are growing) but compared to most national and international organizations (hobbies, sports, etc...) we are a small outfit. But as long as we don't start fading away I don't think size matters.

There are many more women than men in the COA — about 13% more. Approximately 366 (end of 1991 figures) members have Florida addresses, compared with California, in second place with 112. Four states — Florida, California, Texas and New York — have more members than all the remaining states combined. Five states (two with coastlines) have no COA members. The east coast states, including all of Florida, have about 700 members, as compared with 144 on the west coast, including Alaska.

Of the 51 COA-member shell clubs in the U.S., 16 are in Florida and five are on the west coast. Of the 16 Florida shell clubs, 15 publish a newsletter. To break this down further, the greatest concentration of members in Florida starts with the Sanibel-Captiva and Fort Myers area. Next are the Miami and then the Sarasota areas.

It is evident from examining several shell club rosters that although some COA members are members of several shell clubs, the ratio of COA members to shell club members is very low. One more observation at this time: the average age of our members is getting higher, but then so is the average age of Americans in general (and of the American Fishermen specifically. The American Fishing and Tackle Manufacturing Association reported that "their age" increased from 40 to 45 in the last decade.)

You may draw some of your own conclusions from these brief data. One that I see is that if we want to grow there is a very large field to be tapped. Some of you are already actively recruiting. If others want a job helping the COA grow, contact any of the Board members and they will see that you are assigned to the proper position.

I am grateful to you for the opportunities to serve that you made possible. I will be looking for you in Jacksonville.

Glen Deuel, President

1992-93 SLATE ANNOUNCED

The 1992 Nominating Committee announces the following slate of officers for the 1992-93 COA business year:

PRESIDENT	Doris Underwood
VICE-PRESIDENT	Linda Koestel
TREASURER	Walter Sage
SECRETARY	Barbara Elliott
EXECUTIVE BOARD	Lucy Clampit (2 year term)

After approval by the Board of Directors, this slate will be presented to the general membership for their approval at the Annual Meeting in Jacksonville. This year's Nominating Committee, appointed by President Glen Deuel, consists of Chairman Dick Forbush, Al Chadwick and Charles Roe. COA thanks them for their diligent work in our behalf.

ARGENTINE TROPHONS REVISITED — or Dr. Powell, I Owe You an Apology by Emily H. Vokes

In the first part of my remarks on collecting Trophons in Argentina, (Vokes, 1991a, p. 9) I noted that Powell (1951, p. 56) had erected the taxon *Stramonitrophon* for the Magellanic species *T. plicatus* (Lightfoot, 1786) and added that I had long been bothered by this, for the shell of *T. plicatus* is so like *T. geversianus* (Pallas, 1774), type of the genus *Trophon*, it seemed unlikely that it should have such a totally different, thaidine appearing, radula [compare figs. 1b and 2b].

At the same time I reported further that, to my great joy, Calvo (1987, fig. 99) had more recently shown the radula of *T. plicatus* [fig. 3b] to be similar to that of *T. geversianus*, thus confirming my suspicions about Powell's material being mixed.

In the second part of the series (Vokes, 1991b, p. 10) I discussed at some length a confusing species of *Trophon*, which occurs in large numbers in Golfo San Jose, on the north side of the Valdés Peninsula. It combines features of both *T. geversianus* and *T. plicatus*, with shells ranging from almost smooth, as in *T. varians* d'Orbigny [compare figs. 3a and 4a], to cancellate, as in *T. geversianus* [compare figs. 3aa and 1a], to smooth with large varical flanges, as in *T. plicatus* [compare figs. 3aaa and 2a].

It was noted that, ecologically speaking, there are minor differences between this mystery shell and both *T. geversianus* and *T. varians*, the latter commonly occurring in the Golfo Nuevo, on the south side of the Valdés Peninsula (and which I considered a probable synonym of *T. geversianus*). These both occur on *Mytilus* clumps, but the mystery species is found among the algae in the tide pools between the *Mytilus* clumps.

The conclusion presented in the aforementioned paper was that it seemed possible the Golfo San Jose species was neither *T. geversianus* nor

T. plicatus, but a new species similar to the fossil *T. patagonicus* (Sowerby, 1846).

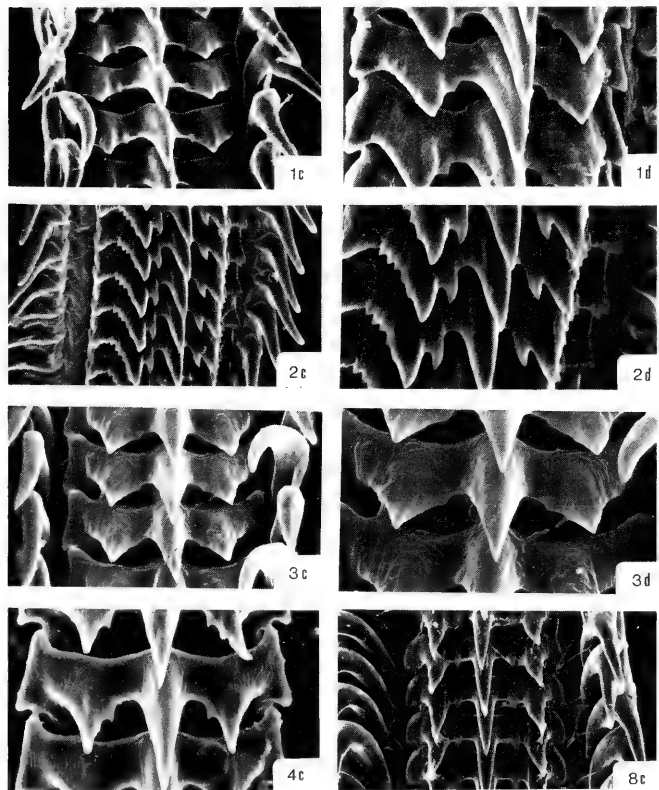
While I was collecting the *Trophon* material in Argentina that led to the two papers just mentioned, I was able to acquire several more or less live (some rather dried up in beach specimens) animals of the various species. I prepared several radulae for the SEM, only to discover that our SEM technician was being promoted to Head Honcho of the entire University instrumentation facility and did not have time to do my piddling little snail-teeth. But, at last, we have a new technician, who is not only willing but wonderfully able to provide SEM photographs of the radula. And the results were unexpected, to say the least!

There are not three but four species — true *T. geversianus* [figs. 1a-d], *T. varians* [figs. 4a, c], and the mystery species [figs. 3a-d], all of which have radulae that are generally similar but each quite distinctive, and then there is true *T. plicatus* [figs. 2a-d], which is totally different from these three. Comparing the SEM radula photograph of the mystery species to the drawing given by Calvo [compare figs. 3b and 3c], it seems obvious that the species upon which the Calvo illustration was based is the mystery shell and not true *T. plicatus*, which turns out to be exactly as illustrated by Powell [compare figs. 2b and 2c].

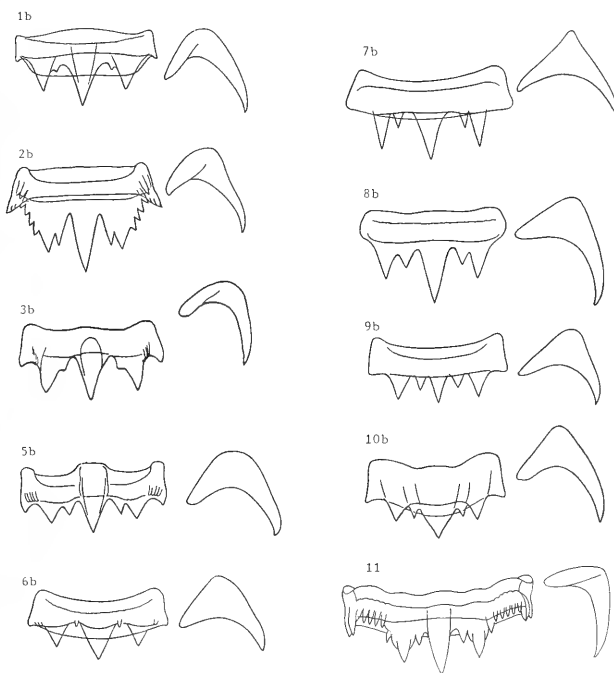
As Powell originally noted, except for the anomalous radula there is no reason to separate *T. plicatus* from the other members of the genus *Trophon*. Although the radula does have a certain "thaidine" appearance, suggesting that the species is related to members of the California genus *Austrotrophon* [fig. 11 — *A. cerrosensis* Dall, 1891], this is the only point of similarity. The operculum in *Austrotrophon* is also typically

(continued on page 4)

*Department of Geology, Tulane University New Orleans, Louisiana 70118



Scanning Electron Micrographs of radulae of species of "Trophon": 1, *T. geversianus* (1c x 240, 1d x 370); 2, *T. plicatus* (2c x 330, 2d x 635); 3, *Trophon* sp. (3c x 310, 3d x 535); 4, *T. varians* (4c x 420); 8, *Xymenopsis muriciformis* (8c x 250).



Drawings of radulae of species of "Trophon" (all from Powell, 1951, unless otherwise noted): 1b, *T. geversianus* (Powell, fig. L-81); 2b, *Trophon plicatus* (Powell, fig. L-86); 3b, *Trophon* sp. (Calvo, 1987, fig. 99); 5b, *Fuegotrophon pallidus* (Powell, fig. L-85); 6b, *Trophon echinolamellatus* (Powell, fig. L-83); 7b, *Trophon paucilamellatus* (Powell, fig. L-82); 8b, *Xymenopsis muriciformis* (Powell, fig. M-90) [as *T. albidus*]; 9b, *T. cuspidarioides* (Powell, fig. M-89); 10b, *T. scotianus* (Powell, fig. M-88); 11, *Austrotrophon cerrosensis* Dall (unpublished drawing from Radwin and D'Attilio).

purpuroid, with a lateral nucleus, but the operculum of *T. plicatus* is identical to that of the other Magellanic *Trophon* species.

Presuming that Penchaszadeh (1976) correctly identified his material (unfortunately no figure of the shell is given, but Carcelles, 1946, illustrated several specimens that seem referable to *T. plicatus* from the same locality as Penchaszadeh's material of "*T. laciniatus*"), the egg capsules of *T. plicatus* are also identical to those of *T. geversianus*.

So where does this get us? A cursory examination of the radulae of several different species of trophonine genera, including those figured in Radwin and D'Attilio (1976, text-figs. 121 [*Boreotrophon*], 128 [*Paratrophon*], 132 [*Trophon* s. s.], 137 [*Xymenopsis*], 139 [*Zeotrophon*]), as well as the many Magellanic species figured by Powell (1951) and refigured here, makes it painfully obvious that, as D'Attilio (1982, p. 97) noted for the subfamily *Typhinae*, there does not seem to be any such thing as a "typical" *Trophon* radula.

On the basis of the shell the species figured here as figures 1, 3, 4, 6, and 10 should all be referred to *Trophon* s. s. And the radulae figured in figs. 1b-d, 3b-d, and 4c do all seem closely related. But what about figs. 6b and 10b? The shell in fig. 6 is *T. echinolamellatus* Powell and the radula looks most like that of fig. 7, which is *T. paucilamellatus* Powell — but the shells are totally different. In fact, on the basis of the radular drawings, figs 6, 7, 8, and 9 should all be in the same subgenus — but **conchologically** the species would be assigned as follows:

fig. 6: *Trophon* s. s.

fig. 8: *Xymenopsis*

fig. 7: *Stramonitrophon*

fig. 9: *Nodulotrophon*

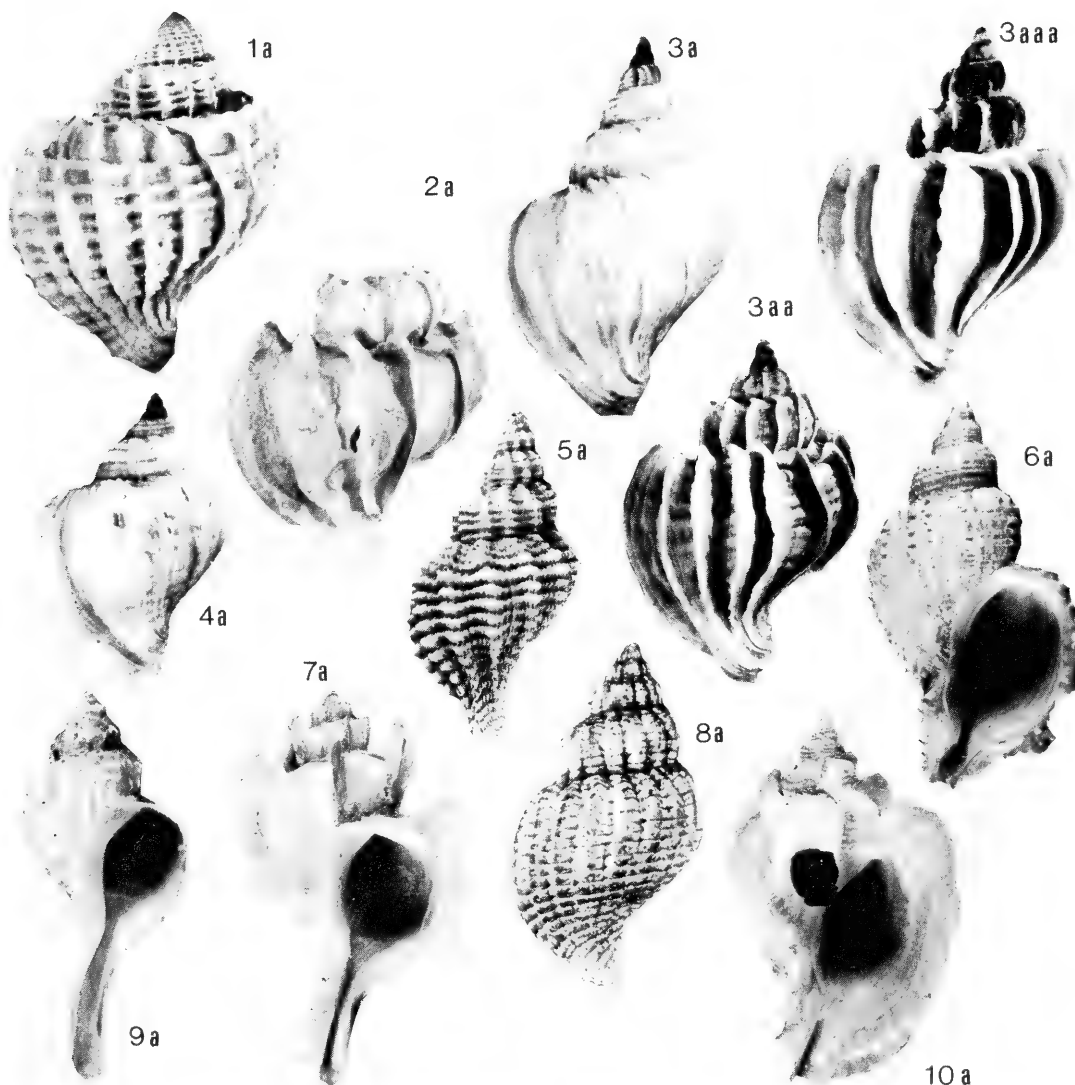
Other authors have published numerous illustrations of trophonine radulae and the confusion between placement on shell vs. radular type is equally equivocal. Unfortunately, not nearly enough radulae have been

illustrated and, at this time, the only course to take is to realize that we simply do not have enough information on these species to make any meaningful decisions. With the help of Zuzana Hruska, our wonderful technician to whom I am forever indebted, I will keep chipping away at the radular part. In time, with more anatomical data, radulae of more species, egg capsules of more species, etc., maybe someday a pattern will emerge.

But for now, all I honestly can say is that, based upon the radulae, *Trophon geversianus*, *T. varians*, *T. plicatus*, and *Trophon* sp. from Golfo San Jose represent four distinct species, all of which are provisionally placed in *Trophon* s. s. And were Dr. Powell still alive, I would be on my knees begging his forgiveness!

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Specimens of species of "*Trophon*":

- 1a, *Trophon geversianus* (h = 46.8mm);
- 2a, *T. plicatus* (h = 61.3mm);
- 3a, *T. sp* (h = 34.2mm);
- 3aa, *T. sp* (h = 36.5mm);
- 3aaa, *T. sp.* (h = 33.5mm);
- 4a, *T. varians* (h = 29.2mm),
- 5a, *Fuegotrophon pallidus* (Broderip, 1833) (h = 21.7mm);
- 6a, *T. echinolamellatus* Powell, 1952 (holotype, h = 62.5mm);
- 7a, *T. paucilamellatus* Powell, 1951 (holotype, h = 31.0mm);
- 8a, *Xymenopsis muriciformis* (King and Broderip, 1832) (h = 23.7mm);
- 9a, *T. cuspidarioides* Powell, 1951 (holotype, h = 12.6mm);
- 10a, *T. scotianus* Powell, 1951.

THE SEA OF CORTEZ ONE MORE TIME

with Bob Purtymun

Once on a trip to the Kingdom of Tonga we had used "The Moorings" boats for day trips, so, in early 1991, when I received a "Moorings" ad promoting "the Best Sailing Vacations in the World," I was interested. Their agents are right across the street from my condo, in the Brickyard Landing Yacht Club, so I hustled right over for more information. "The Moorings" operates out of other places besides Tonga: many ports in the Caribbean; Tahiti's Leeward Islands; Phuket, Thailand; The Mediterranean; and Puerto Escondido, Sea of Cortez, Mexico.

The Sea of Cortez sounded great to me; I had not been there since Wes Thorsson and I made a trip to San Carlos, Sonora on the Mexican mainland in 1980. "The Moorings" base at Puerto Escondido (means "hidden port") is a few miles south of Loreto's International Airport, on the Baja Peninsula, about 16 hours driving time south of San Diego.

I put out a few feelers and learned Betty and Wes Thorsson of Honolulu wanted to make the trip. Wes and I have collected together since the early 1970's. Dr. George Metz of Novato, California also wanted to go. George is an "old hand" at collecting in the Sea of Cortez. We scheduled the trip for July 15-25, 1991, chartering a Moorings 37 yacht with skipper. We'd do our own cooking on a fully provisioned yacht equipped with everything needed for a 10 day cruise. All we needed was our personal gear.

George drove, hauling all the heavy gear, weight belts, fishing poles, and such. Betty, Wes and I flew south from Los Angeles on Aero California, to meet George at the El Presidente Hotel in Loreto on the evening of July 14th. Next morning we loaded into Mexican taxis to be whisked off to Puerto Escondido. And I do mean "whisked," as only a Mexican taxi can whisk! "The Moorings" had a scheduled 9:00 a.m. orientation and slide presentation of the various harbors and bays available for overnight anchorages; we were not permitted to move the boat during darkness. Our charter was to begin at noon.

Aboard "Pelican," we inventoried food, kitchen utensils, and such. All was in order. In fact we probably could have spent a month at sea with what "The Moorings" had furnished — no starving on this trip! About 10:00 AM our skipper "Marv" came aboard. A "burnt-out" school principal from Longview, Washington, he had planned to sail his yacht from Puget Sound down the west coast, through the Panama Canal, and up the east coast, about two years ago. "Kinda liked the Puerto Escondido area and decided to work charters for The Moorings. "Maybe we'll move on at the end of this season," he surmised.

Well, best get our gear on board, and prepare to get underway. Our scuba tanks would be here about noon. I could see our skipper's dismay as all our collecting equipment, fishing tackle, and diving gear came aboard. Most boat operators are not familiar with the needs of shell collectors. But soon he relaxed as we sorted and stowed our gear in the nooks and crannies of the boat, according to the routine we'd developed over the past 30 years. We even had George's shell traps.

When our scuba tanks arrived at 1500, we set out by motor for Candeleros Point, about 7 miles south. Maneuvering the boat into a little bay just west of Candeleros Point, Marv dropped anchor between a little island detached from the mainland by a shallow rocky channel, and a

gleaming white sandy beach backed by a narrow strip of green vegetation, with towering stark massive mountains in the rear. It looked like just what we needed — a place to shake down and check out our equipment. My impatience quickly had me finning my way toward the island, where I found huge rocks covered with a heavy growth of sea weed in the shallows. At the base of the rocks in the sandy area, hundreds of fish fanning out nest sites and fighting over territorial areas in preparation for spawning meant there wouldn't be any sand shells here. The whole area was disrupted by the fish. On the rocks in the weeds I found some large *Conus princeps* Linnaeus, 1758 and *C. nux* Broderip, 1833, a couple of *Mitra tristis* Broderip, 1836, and a *Columbella haemastoma* Sowerby, 1832. A nice end to our first day in Mexico, complete with a beautiful sunset over the rugged peaks of the Sierra de la Giganta.

Log this dive; July 15, 1991 dive #1 snorkel 0 to 10 feet, 58 minutes, water temp. 85f, lat. 25-43 north x long. 111-13.75 west.

In the morning from the same anchorage as last night Wes and I set our compasses for 150 feet off the point and entered the water off the Pelican's stern. The sandy bottom had patches of weeds and a few trails with *Oliva spicata* (Roding, 1798) at the end. Then a little larger trail yielded a small *Oliva porphyria* (Linnaeus, 1758); I kept it, thinking it would be the smallest in my collection. When our pressure gauges reached 1500 psi we turned toward the point and the rocky base, then the boat. As before, hundreds of fish were fighting for spawning sites. Normally this is an excellent collecting area, where the rocky base meets the sand areas, but not on this trip.

Log this dive; July 16, 1991 dive #1 scuba 22 to 48 feet, 74 minutes, water temp. 85f, lat. 25-43n x long. 111-13.75w.

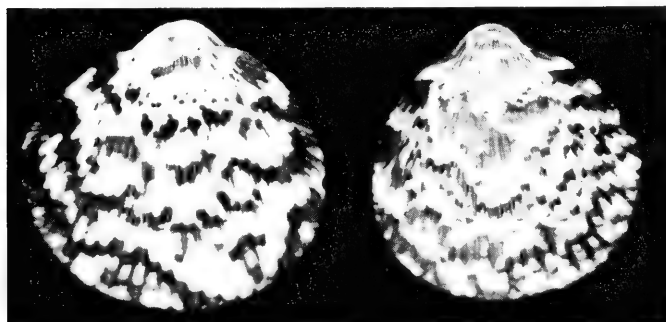
Scuba tanks were a problem. Wes and I were diving while George and Betty beach-walked and snorkeled. We had arranged for four full tanks to be delivered to The Moorings in Puerto Escondido every other day, but this wasn't enough. Marv, our clever skipper, said the yacht "Tangent," anchored about 200 yards west of us, had a compressor on board, and that he was going to take our 2 now-empty tanks over for a fill, so we could head out in the gulf. Mission accomplished, we hauled anchor and were on our way to Monserrate, about 15 nautical miles south east of Puerto Escondido.

In early afternoon we dropped anchor in 15 feet of water about 100 yards off Yellowstone Beach, so named for the yellow sand-stone bluffs behind the brilliant white sand beach. We had passed over a shallow rocky reef on the way into the bay that Wes and I thought would make a good dive, so Marv took us back in the skiff and dropped us off. Below, on a series of weed-covered rocky ledges, we observed many *Muricanthus princeps* (Broderip, 1933) all covered with heavy calcium encrustations, as well as a few *C. princeps*. As we left the rocky area on our way toward the boat, the bottom turned to fine silty sand, where I collected a few bivalves and terebra.

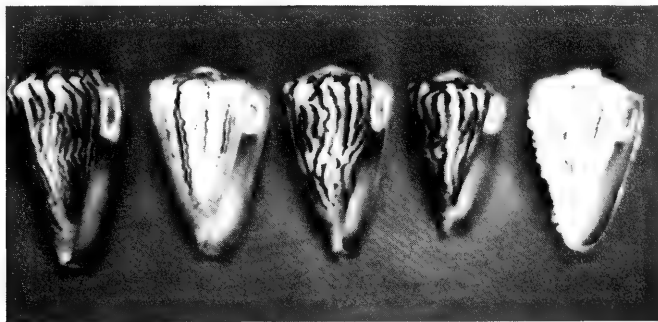
Log this dive; July 16, 1991 dive #2 scuba 10 to 23 feet, 94 minutes, water temp. 82f, lat. 25-42.2 north x long. 111-03.7 west.

(continued on page 6)

*1200 Brickyard Way, #407, Point Richmond, CA 94801



Glycymeris multicostata (Sowerby, 1883)



Conus princeps Linné, 1758



Conus brunneus and *C. bartschi*. Myra Keen says *C. bartschi* is a synonym of *C. brunneus*. J.G. Walls holds them to be separate species. Alex Kerstitch shows they are separate species with pictures of animals.

In the morning after a hearty breakfast we hauled anchor and made our next dive between the two little islands just north of Monserrate Island. The bottom was covered with large rocks in coarse sand. Fifteen minutes into the dive we ran into a mass of sea urchins. I would estimate between 200 to 300 in an area 30 feet in diameter. Probably a spawning cluster, but there was no activity at present. I collected two nice *Strombus galeatus* Swainson, 1823 and large *Fasciolaria princeps* Sowerby, 1825. I gave the *F. princeps* to George who was going to boil him in preparation for his collection, but the mollusc gave such a magnificent performance in the picture aquarium that we spared him and tossed him overboard at the next likely looking habitat.

Log this dive; July 17, 1991 dive #1 scuba 35 to 38 feet, 69 minutes, water temp. 80f, lat. 25-44.3 north x long. 111-3.3 west.

Now it was up anchor for Puerto Escondido and a scuba tank exchange. George and I rigged the fishing poles and trolled on the way. My bait was accepted by a nice little tuna, and after a lively fight I slipped the hook and watched him? her? swim away. We had plenty to eat. After exchanging tanks, we were off to Marquer Bay, Carmen Island about six nautical miles north east of Puerto Escondido. On the way we spotted a few manta rays lolling on the surface and we cruised close trying to get pictures. Then in the distance someone spotted what appeared to be the head of a sea lion moving on the surface. But as we got nearer it turned out to be the dorsal fin of a whale shark. We cruised side by side for a few seconds before it turned and sounded under the boat. This was one of the highlights of our trip. Very few people have seen this beautiful animal.

Marv anchored in 15 feet of water in the southern bight of Marquer Bay, with still time for an evening snorkel. Off we went to paddle along the south shore of the bay; the bottom was fine silty sand at about 15 feet and along the shore were large weed-covered rocks. About all I collected here was good exercise.

Log this dive; July 17, 1991 dive #2 snorkel, 0 to 25 feet, 59 minutes, water temp. 80f, lat. 25-52.8 north x long. 111-14.0 west.

In the morning we sailed northward along the west coast of Carmen Island, our destination, Puerto Ballandra. You couldn't ask for a more picturesque anchorage: a circular bay with a narrow opening to the Gulf on the west; a quiet oasis surrounded by rough craggy mountains, and gleaming white sandy beaches at the water's edge. Combine this with pale green shallows shading into the dark blue deep water to get the feeling of being in your own special paradise. We dropped the hook on the northern edge of the bay, and after lunch Wes and I slipped into the water and worked westward in about 40 feet of water. It was a sand dive with fine silty sand to coarse clean sand. No shells collected, although I saw many *Terebra robusta* Hinds, 1844 a few *Olivella dama* (Wood, 1828) and miscellaneous other sand shells.

Log this dive; July 18, 1991 dive #1 scuba, 20 to 39 feet, 78 minutes, water temp. 82f, lat. 26-00.2 north x long. 111-10.7 west.



Cassis coarctata Sowerby, 1825

In the morning, we ran northward to Cholla Island, a low rocky outcropping several hundred yards in diameter, about a mile from our anchorage. Mexican fishermen had erected several crude shelters on the island, but only a few buzzards were there when we arrived. George and Betty snorkeled while Wes and I dived the western side of the island — large weed-covered rocks in the shallows to fine silty sand; on out a somewhat coarse sand bar. I followed a wide zig-zag track in the sand to find a large *Fasciolaria princeps* with a broken spire; as far as I know it is still zig-zagging. One of the better bivalves I collected was a *Glycymeris multicostata* (Sowerby, 1833). Here again were many *Terebra robusta* at the end of sand trails.

Log this dive; July 19, 1991 dive #1 scuba, 15 to 40 feet, 70 minutes, water temp. 82f, lat. 26-02.9 north x long. 111-11.5 west.

Back to Puerto Escondido for a scuba tank exchange — no problem, and so off to Honeymoon Cove on Danzante Island. George had brought my little 50 cubic foot scuba tank and this seemed like a good time to give it a try. As I got into my gear my mind drifted back to all the dives that this little tank and I have made — Hawaii in the Hilton Hawaiian Channel, Kawai off Poipu when I collected my 5 1/2-inch tiger cowry, and Samoa. Samoa, where I had drifted off into the darkness night after night looking for shells, or a lobster for dinner, or maybe a tender 7-11 spot crab.

But back to tonight. My torch made the plankton sparkle as I drifted toward the bottom. I could see trails and picked a large one to follow. At the end was a 3-inch *Oliva porphyria*. "Boy, I've got it made," I thought, "I'll get a zillion of 'em." Not so; after 30 minutes of zig-zagging back and forth, all the other trails ended with a *Terebra robusta*. Not another shell. Back to the drawing board.

Log this dive; July 19, 1991 dive #2 scuba, night, 20 to 40 feet, 35 minutes, water temp. 80f, lat. 25-47.7 north x long. 111-15.7 west.

After a hearty breakfast we hauled anchor and set sail south of south west for Big Candeleros. A short run brought us to a nice calm anchorage, just inside the hook of Big Candeleros Point, in 10 feet of water. Marv took the skiff with Betty and George over to a little island to beach walk and snorkel. Wes and I entered the water off the "Pelican's" stern. We set our compass bearings in an eastern direction that would take us out into the Gulf. Our standard procedure was to work the bottom on the bearings until half our air was gone, then move left or right for 75 to 100 feet and reverse bearings to bring us back near the boat. The bottom was fine-silty sand with scattered patches of seaweed. We found many *Terebra variegata* Gray, 1834 and *Oliva spicata*. The olives were much darker brown than we had seen. Among the bivalves collected was a nice *Chione californiensis* (Broderip, 1835).

Log this dive; July 20, 1991 dive #1 scuba, 9 to 22 feet, 90 minutes, water temp. 82f, lat. 25-43.75 north x long. 111-14.8 west.

Lunch and a short siesta over, we all took the skiff to the Isla Sud, a large rock outcropping north of Candeleros Point; Wes and I found the

bottom on the west to be a very steep slope of loose seaweed-covered rock and rubble. At about 45 feet we turned north to work slowly around the base of the rocky islet, then up the slope and back toward the skiff in the shallows. One of the first shells I found was a nice *Lyropecten subnodosus* (Sowerby, 1835). Also, this dive turned up the most *Conus brunneus* Wood, 1828, even some that were spawning.

Log this dive; July 20, 1991 dive #2 scuba, 0 to 52 feet, 66 minutes, water temp. 84f, lat. 25-43.9 north x long. 111-13.8 west.

Back to Puerto Escondido for a tank swap and some fresh fruit, then a long run northward for Coronados Island. Again manta rays lolling on the surface and several small schools of porpoise. Half way there my fishing rod began to dance, and my reel began to sing. I was hooked into a dorado (mahi mahi to Hawaiians). Boy! what a fight those fish put up! Spectacular leaps! George and I always trolled between anchorages, releasing our occasional catches, but this was real eating fish. About 6-7 pounds, it was promptly cleaned, filleted, and into the ice box.

We ate lunch in a sheltered anchorage at the southern end of Coronados Island, then motored north in the skiff along the western side of the island. Betty got off on the first rocky point to beach walk; George, in the next cove to snorkel. Soon Wes and I slipped into the water and hit a cold thermocline at 15 feet. In my lycra skin, all I could think of was my wet suit jacket back on the boat two miles away — one of the most unpleasant dives of my life. Very large rocks covered with seaweed sloped to 45 feet, then leveled off in coarse sand with large broken chunks of bivalve shell. Here I collected a nice clean red *Spondylus princeps* Broderip, 1833, one of the better shells of the trip.

Log this dive; July 21, 1991 #1 scuba, 10 to 48 feet, 60 minutes, water temp 80f at the top 74f at 15 feet, lat. 26-07.2 north x long. 111-17.8 west.

Next morning, from the stern of the "Pelican," I could see trails on the sandy bottom 20 feet below. I just had to check them out, but all I found at the end of the trails were *Terebra robusta* and some very light colored *Oliva spicata*.

Log this dive; July 22, 1991 #1 snorkel, 15 to 20 feet, 20 minutes, water temp. 80f, lat. 26-06.5 north x long. 111-17.75 west.

After breakfast we headed south toward Chenque Bay to dive, and be close to The Moorings for a tank exchange. On the way we ran into a huge school of porpoise — at least 500 individuals. We cruised with them for about 20 minutes, while George shot a whole roll of film trying to catch one in mid-air.

Marv dropped hook just inside the southern bight of Chenque Bay on a sandy bottom about 12 feet deep. After lunch we dived on the eastern side of a big rocky outcropping off the point, and found a strong southern current. It wasn't bad on the bottom, so we worked around toward the northern shore and surfaced near where Marv and George were snorkel-

ing. Another very pleasant evening and another spectacular sunset.

Log this dive; July 22, 1991 #2 scuba, 10 to 59 feet, 61 minutes, water temp. 75f, lat. 25-50.6 north x long. 111-19.2 west.

After breakfast it was up anchor and underway for Puerto Escondido. Fish jumping off the next point to the north detoured our course. Within five minutes I had a terrific strike — another dorado, a nice one, about 9 pounds. After the tank exchange, we set sail for Punta Baja, the south point of Isla Carmen. We anchored in 15 feet off a low sandy bank on the southern tip. Betty and George went to the beach, then Wes and I headed south-west along the west of a long sand bar extending off the tip of the island.

In about 25 feet Marv anchored our skiff — here was a hard bottom with scattered patches of sand, coralline algae and coralline hydroids, red-coated when alive, bleached white when dead. We found *Strombus granulatus* Swainson, 1822, *Olivella dama*, and seven *Mitra sphoni* Shasky and Campbell, 1964. Perhaps we have hit the heartland for this rare mitre, seldom seen on price or exchange lists. All in all, a very interesting dive.

Meanwhile on the beach Betty and George found the sandy bluffs to be an up-thrust of sedimentary deposit with many fossil shells embedded in the soft sandstone. They had a ball!

Log this dive; July 23, 1991 #1 scuba 15 to 28 feet, 101 minutes, water temp. 84f, lat. 25-48. 5n x long. 111-13.2 west.

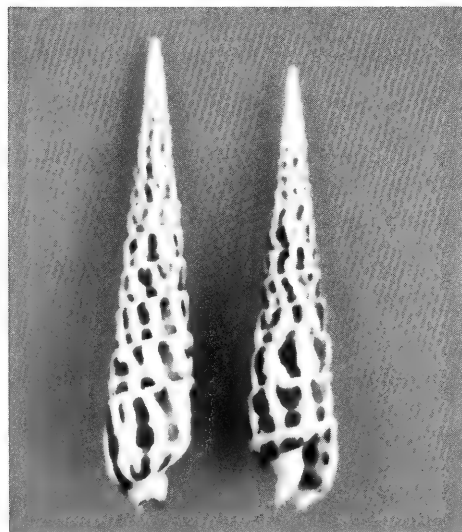
Back to Honeymoon Cove for the night. The general area is tabu for an overnight anchorage, exposed to both northern and southern winds as well as a tidal current, but Honeymoon Cove is a very protected bay with stark rocky hills on three sides and a narrow opening to the west. The choice anchorage was already taken so we had to anchor on a rather steep bank, dropping the anchor in 35 feet of water, swinging on the line until the Pelican was about 75 feet off the beach in 20 feet of water.

Next morning we elected to dive off the Pelican. Wes and I set our compass bearings slightly off the northern headland by the entrance to the cove. The silty sand bottom had many *Terebra robusta* and little else. Out toward the headland we veered shorewards to a steep slope with large boulders. Back toward the Pelican in shallow water we worked through coarse silty sand with scattered rocks and rubble. Under the pieces of rubble I found *Trivia solandri* (Sowerby, 1832).

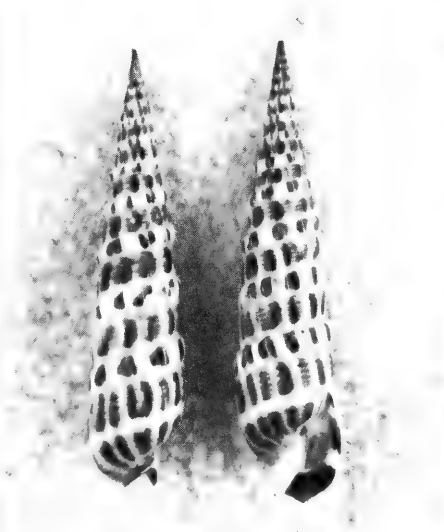
Log this dive; July 24, 1991 #1 scuba 15 to 52 feet, 73 minutes, water temp. 80f, lat 25-47.7 north x long. 111-15.75 west.

We spent our last afternoon trolling for dorado. George hooked two, and landed one. Then to Puerto Escondido for the night. An early flight home on Aero California concluded our spectacular Sea of Cortez trip: brilliant blue water, flaming sunsets, placid seas and good food, rugged

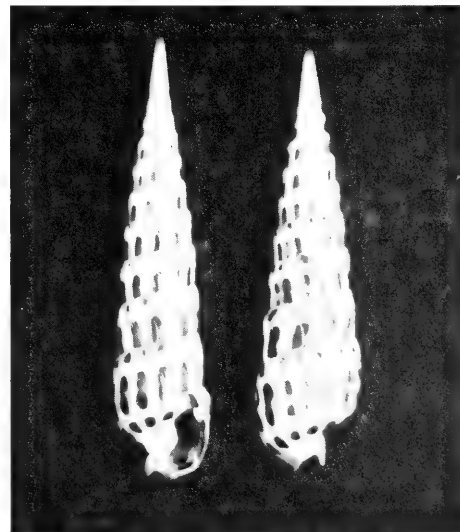
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Terebra robusta Hinds, 1844

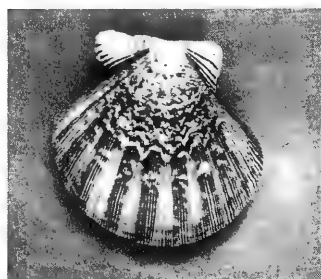


Terebra variegata Gray, 1834



Terebra ornata Gray, 1834

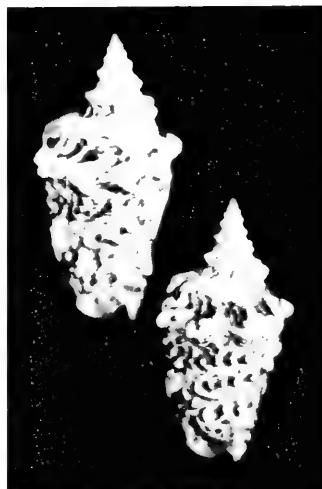
landscape and gleaming white beaches, manta rays, porpoise schools and a whale shark, tuna and leaping dorado. Regrettably, I'd rate the shelling as very poor. Could this be due to the extreme changes in water temperature or the violent storms that wrack this area in winter, or both? Though my shells aren't cleaned or catalogued yet, Wes has logged just 12 species of bivalves and 56 species of Gastropoda. We've collected at least five times as many species on the mainland side of the Gulf at San Carlos.



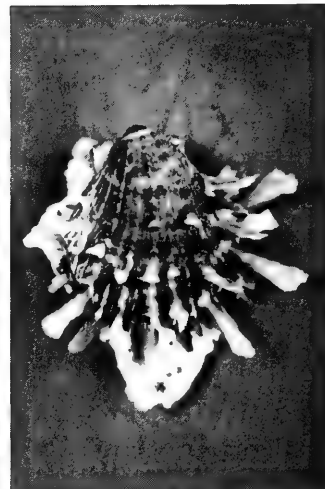
Lyropecten subnodosus
(Sowerby, 1935)



Chione californiensis
(Broderip, 1835)



Strombus granulosus
Swainson, 1822



Spondylus princeps
Broderip, 1833

CONSERVATION'S THE WORD

In browsing through the shell club newsletters, we see an increase in conservation awareness, especially among the Florida clubs. The Southwest Florida Conchologist Society had the following batch of reminders in their April 1992 issue. We hope they're in time for your summer vacation and help you preserve our earth's greatest treasure, the Oceans.

A Sheller's Creed

The wildlife and natural resources of this planet have been entrusted to me for protection and preservation. Whether I wish it or not, I must account to the future for my handling of this wealth today. If I collect shells, I will do it conservatively, recognizing that the destruction of the marine habitat, by whatever means, is the true enemy of the sea and its creatures.

Four Rules To Shell By

1. BE ALERT FOR SHELL EGGS AND PROTECT THEM. They have a slim chance of survival at best. Don't take the shell that is guarding them. Avoid disturbing breeding groups.
2. COLLECT ONLY WHAT YOU REALLY NEED. Take time to examine your finds. Imperfect and immature shells are of no use to you. Leave them to grow and to breed.
3. PUT THAT ROCK OR CORAL BACK IN PLACE, the way you found it, even in deep water. Continued exposure will kill it.
4. LEAVE THE LIVE CORAL HEADS ALONE! That's not where the shells live. Look in the rubble, under the slabs, in the sand, and among the loose chunks.

COMING IN SEPTEMBER...

"What is it?"

A new column for identification of those puzzles and mysteries in your collection.

Send a clear photo of your stumper shell along with accurate size, locality data, and color to the editor, and we'll publish it. Someone in our membership is sure to write to us with the identity of your shell, and we'll publish that too. Mail photos to The Editor, 1222 Holsworth Lane, Louisville, KY 40222. All photos will be returned if accompanied by a self-addressed stamped envelope.

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ITALIAN MALACOLOGICAL PUBLICATIONS

Riccardo Giannuzzi Savelli, of the Italian Malacological Society writes that COA members will be allowed a 10% discount on any of their publications, available through **Naturama**, C.P. 28 (Succ. 26), 90146 Palermo, Italy. Write for a complete list and details. Some of the titles available from Naturama are:

Conchiglie Fossili del Roero — Atlante Iconografico, O. Cavallo and G. Repetto. 256 pages 103 plates. 711 Pliocene fossil mollusk species from the Roero Hills in Italy. 70 lire.

Atlas of Mediterranean Nudibranchs, R. Cattaneo-Vietti, R. Chemello & R. Giannuzzi-Savelli. 284 pages, 14 plates, 108 color photos, 180 drawings. 75 lire.

Annotated Checklist of Mediterranean Mollusks. Vol. 1. B. Sabelli, R. Giannuzzi Savelli & D. Bedulli. 348 pages, softbound. 1000 numbered copies. 55 lire.

Revisions of Northeast Atlantic Bathyal and Abyssal Gastropoda, P. Bouchet & A. Warén Paperbound. Part 2: 172 pages, 441 figures. 70 lire. Part 3: 272 pages, 542 figures. 80 lire.

New and Little Known "Skeneimorph" Gastropods from Mediterranean Sea and the Adjacent Atlantic Ocean, A. Warén 50 pages with 47 black and white plates. 40 lire.

HOW THEY LIVE WHERE THEY LIVE

by Peggy Williams

Mollusks come in an incredible variety of shapes, sizes, and colors — and this is mostly by design. Shell characteristics are often adaptations to the environment and the struggle to survive, for mollusks, as all animals, must 1) find food, 2) protect themselves from predators, 3) survive within the limits and perils of their environment, 4) avoid competition for available food and living space. Each habitat supports a different group of mollusks that has evolved to deal especially with the possibilities and limitations of that singular niche. The adaptation of shell and habits to satisfy these needs among mollusks is fascinating.

Heads in the Sand

Sand is an excellent place to live, especially for mollusks. Sand provides protection from predation (unless you are eaten by another species of sand-dwelling mollusk) and protection from desiccation for intertidal species. It's an easy medium to penetrate, especially if your shell is adapted for that purpose, and there are many mollusks that have evolved to take advantage of the sandy habitat.

Of course, many — if not most — bivalves are adapted to live in sand. The smooth shells of Coquinas (*Donax denticulatus*) allow quick burrowing; the slightly rough shells of the cockles keep the animals in place. Bivalves in quiet waters can count on staying put once they've burrowed, while others, such as Pen Shells, secrete a byssus to help hold them down. However, bivalves are a source of food for many gastropod mollusks which have adapted to the sand as well.

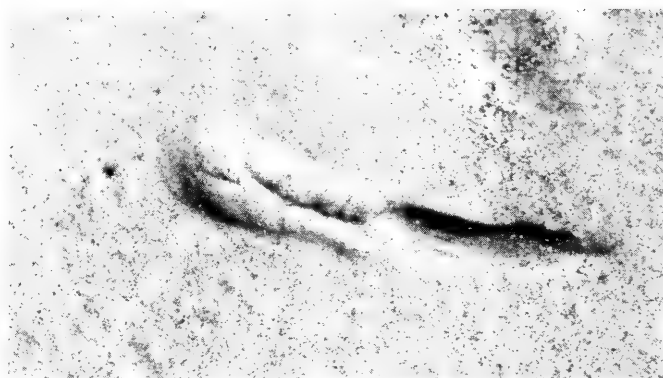
The list of gastropods that spend much of their time buried in sand includes: Terebras, Olives, Cones, Marginellas, Naticas, Tuns, Epitoniums, Figs, Volutes, Nutmegs, Miters, Nutmegs and "Bubbles." Think about the shapes of these shells — they are generally either elongated or round. None of them have spines, since spines would be difficult to drag under the sand and would tend to catch on buried rocks or shells. Many of them lack an operculum, which is not needed where predators penetrate and desiccation is unlikely.

An elongated shell is easy to pull under the sand. A slight roughness to the shell may help keep it in place, especially in a surf environment where the animal is only slightly buried. Terebras, Nutmegs, and Epitoniums are often found in such an area. I watched *Terebra cinerea* in heavy surf in Jacksonville, Florida exposed on each wave and reburied again by the time the wave receded.

Very smooth shells make movement under sand easier. Some



Terebra dislocata has a long, slim shell that is easy to pull under the sand.



At the end of the trail is a lump containing *Terebra dislocata*.

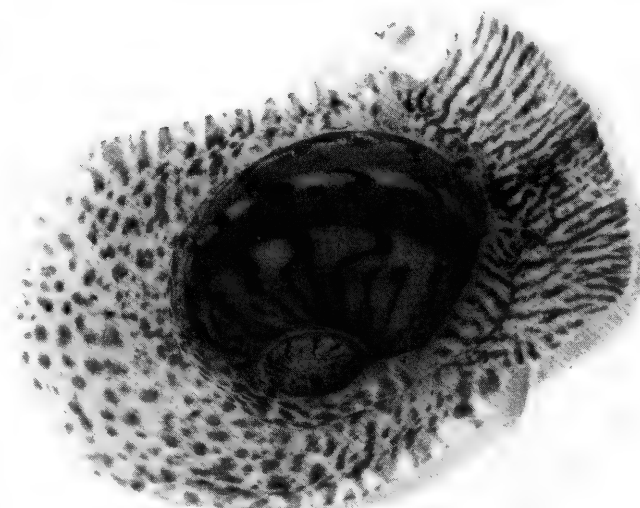
mollusks even secrete a heavy mucus which smoothes their progress. Olives, Marginellas, and Naticas, when collected alive, will "slime" whatever you put them in and leave mucus trails over non-sand surfaces. These animals, when moving about, may extend their mantle over the entire shell — in fact you can't even see the shell of *Sinum perspectivum* (the Baby's Ear) when it is living. The mantle keeps the shell free of entangling organisms such as barnacles and algae; also a smooth,

(continued on page 10)

*P. O. Box 575, Tallevast, FL 34207



Marginellas, like this *Prunum succinea*, have a smooth shell, easy to move under the sand. The wide foot carries no operculum.



Natica canrena has a wide shovel head to burrow with and wide, expanding foot to help support the shell on soft sand. The animal will "slime" everything!

shining shell is a more comfortable surface for the animal to move about on than a rough one. You never see the mantle extended over the shell of a murex!

The animal of such mollusks is also adapted for its environment. Most have longer siphons than rock-dwelling shells, the better to breathe from under the sand. Many have a wide expanding foot which supports them on the soft surface, and a wide "shovel" head which pushes ahead of the shell into the sand. In some, the eyes may not be needed and it is thought that some species of Naticas are blind. However, Olives and other burrowers have a remarkable sense of smell and will erupt from the sand of an aquarium when presented with dead fish or shrimp. Usually they envelop the food with their foot and carry it back under the sand to consume it (Olives are not very interesting in an aquarium).

Finding sand-dwelling gastropods in their natural environment is a challenge. Intertidal species should be hunted during extremely low tides. These animals sense when the tide is turning from its lowest point and begin to move. First they "pop" from under the sand, making an anomalous triangular hole through which they can breathe. Then they begin to move, making a trail in the sand. Surprisingly, most of them head towards shore and away from the water! To find the shell, dig with your fingers at the end of the trail where you might see a small mound of sand. Some of the shells can be quite deep, even at this point.

Each type of mollusk makes a different kind of trail, and it's fun to guess what shell you will find when you investigate. Olives bulldoze a wide swath; Olivellas and Naticas wander all over the place and make it hard to find the end (either end!) of the trail. Sometimes the trail is not a

mollusk at all, but a worm, a sea anemone, or even a tiny Horseshoe Crab!

In deeper water or higher tides, look for these shells either at night, when they are likely to be out hunting, or by fanning away the sand. I will never forget the night we went hunting for *Voluta musica*, the Music Volute, in Tobago. We were in four feet of water, over pure white, featureless sand, when these spectacular animals began emerging from their sleeping places and almost striding across the sand, their beautiful pink-striped mantles contrasting with the white of the sand substrate. Where we would have seen nothing at all in the daytime, at night four of us collected seventy-five of the animals within an hour. (After examining each shell, we kept only the best and put most of them back.)

Fanning the sand is like a treasure hunt. You never know what might be under the surface, and it's frequently nothing at all! Sometimes, however, you will find a gorgeous orange *Prunum carneum*, any number of *Conus* species, or even a Tun shell sleeping during the day. You might even miss a pure white *Morum oniscus* as it tumbles from the sand and immediately reburies itself. To fan the sand, sweep your hand (or your fin) across and a little above the surface in wide swaths. Make a couple of passes, then wait for the sand to settle before you begin again. Your next sweep might blow the shell away from the area entirely! Keep at it — some shells can be buried six inches under the sand!

Living in Florida as I do, I'm frequently asked which beaches are best for shelling. I don't know. Since my joy and delight is finding live shells where they live, I only go to the beach to find Olives and Coquinas. But what fun to visit a sand bar at low tide and discover what marvelous creatures have evolved to survive living in the sand.



Note the very long siphon and eyestalks of *Tonna maculosa*, as well as its wide foot. This shell was fanned up from under four inches of sand in daytime.



The nearly pure white shell of *Morum oniscus* is hard to spot in its sandy habitat.

LETTERS:

American Conchologist is beautiful! and very interesting. I look forward to each issue...

I have raised *Conus textile* cones for 20 something years and was a bit shook up when I read Jean Cate's article in your March '92 issue, page 19. She said "species of the *Conus textile* complex" are piscivorous. Textiles and their relatives eat other gastropods but never fish. The fish-eaters belong to a group such as *Conus geographus*, *C. tulipa*, *C. obscurus*. There is another group which feeds on worms, which is probably the largest cone group. All cones eject toxic darts into their prey, but most are not very potent. But beware of *geographus*, a documented killer. Some of the gastropod-eaters pack a bit of a sting, but are not lethal, as far as we know. We treat all live cones with care when handling them...

Sincerely,

Olive Schoenberg-Dole

3265 Huelani Drive Honolulu, HI 96822-1234

IN MEMORIAM

John Evans

amateur conchologist, author, artist, and member of the COA

For over twenty years, he maintained memberships in South Florida's shell clubs, holding elected positions as well as being actively involved in committee work. He has written and published numerous educational articles on the history of shells and shell collecting. Memorable shell collecting trips led to his interest in Florida-Caribbean shells, especially the Strombidae. He and his wife Jean also exhibited shell art constructions. John was engaged in a pen and ink series of Florida's lighthouses. After a brief but strong fight against cancer, John passed away on April 1, 1992.

— J.E.

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FAR-WANDERERS OF THE SEA

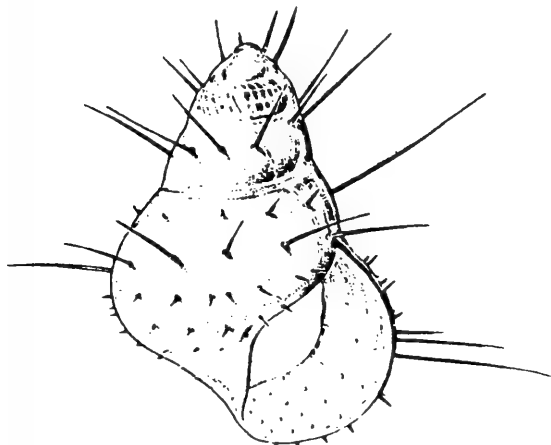
by Betty Jean Piech

When a shell collector first visits a place far from anywhere he has ever collected before, it is always wonderful because the shells are so different. Each one he picks up will probably be an unfamiliar species; most seashells have a certain range in which they live. For some species, this area is very restricted, like *Cymatium lineatum* (Broderip, 1833) which is endemic to the Galapagos Islands. Others, like *Cymatium muricinum* (Roding, 1798) are found in tropical waters around the world. A very small number of these very wide-ranging species are so distributed because they are completely pelagic — they spend their entire lazy lives floating around on the surface of the oceans going wherever the wind and the currents take them. *Janthina janthina* (Linné, 1758) is one such species. But the majority of the seashells that inhabit a large area do so because of the extended life of their planktonic larvae.

R. S. Scheltema has made several studies of the dispersal of these larvae and has coined a new name for them. He calls them *teleplanic larvae* or *teleplanos* (from the Greek *tele* 'lanos' which means far-wandering). He defines these open-sea forms as larvae that originate from shoal-water, continental-shelf benthos; are regularly found in the open sea; have a pelagic development of long duration; and serve as a means for dispersal over long distances. Some of these teleplanic larvae can live for nearly a year. Their long pelagic development is typical of most tropical and warm-temperate species. Cold water forms generally have a shortened larval period.

Scheltema also reports that many of these larvae have morphological adaptations which enhance their survival, such as long periostacal spines, the reduction or complete lack of shell calcification, and an increase in the length of the velar lobes used for swimming and feeding.

D. Laursen, another worker to study these teleplanic larvae, has identified and illustrated many of them. Below is one.



Early stage larva, about 4mm, of *Cymatium* (*Monoplex*) *nicobaricum* (Roding, 1798) (Laursen, 1981:19)

After reaching full development these tiny shells settle down to begin their life on the ocean floor. But another interesting feature of these teleplanic larvae is that many, even after reaching full development, can very conveniently delay their settlement until a suitable environmental habitat is found. Scheltema estimated that *C. nicobaricum* larvae needed 207 days for their growth or development period, but could have an additional delay period of 113 days for a possible total of 320 pelagic days. And in that length of time, these tiny wanderers could travel a long, long way. Several families of mollusks have species with teleplanic larvae, but they are especially common in Ranellidae Gray, 1854 (Cymatiidae). With regard to the dispersal of world-wide species of that family, Clench and Turner wrote in *Johnsonia* that the fossil record indicates that it was established in the early Tertiary. Its origin was probably in the Indo-Pacific, and during the existence of the Tethys Sea

several species were able to migrate into the Atlantic Ocean. This Tethys Sea, ancestor of the Mediterranean, could certainly have provided the path for considerable movement of species (see Ancient Worlds Maps).

Also, there is a great deal of similarity between some western Atlantic species and others in the Panamic Province; for example, *Purpura patula* (Linné, 1758) and *Purpura pansa* Gould, 1853. Check the Ancient Worlds Maps again and you will see that long ago North and South America were not connected and shells could move between the Western Atlantic and the Eastern Pacific without any difficulty. This is probably the explanation for the resemblance between these species.

The present day paths for this larval dispersal are determined by the principal ocean currents. For example, on the west side of the North Atlantic is the Gulf Stream, moving northeastwardly. On the north is the North Atlantic Drift, moving toward the east and dividing into a northern and a southern arm. The eastern section of the Atlantic has the Canary Current, which moves to the southwest. And finally, on the south is the North Equatorial Current, moving westward across the tropical North Atlantic toward the West Indies. This movement of water could easily carry teleplanic larvae between northwest Africa, the Caribbean, and the United States (See Ocean Currents Map).

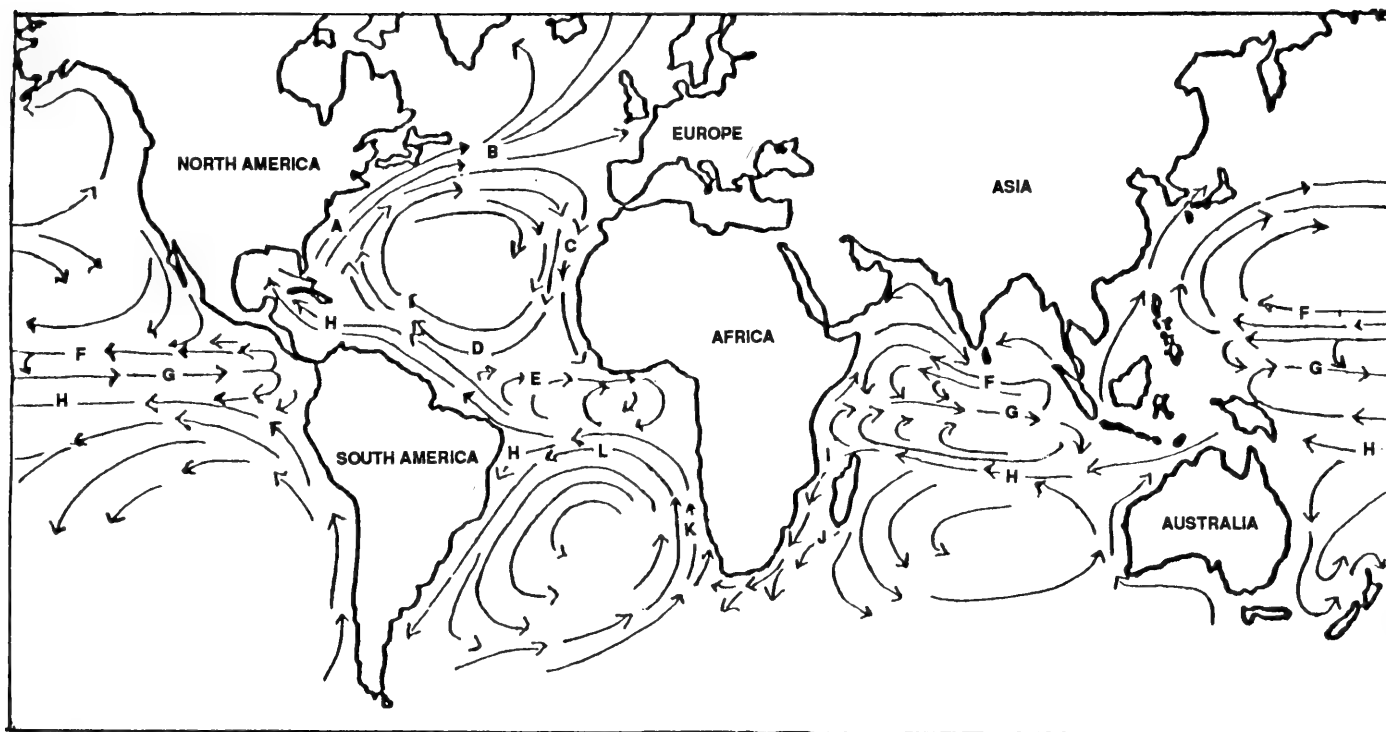
Now look at the currents in the Pacific and Indian Oceans. Shells with teleplanic larvae can easily move through each one. And though it might take a few generations to accomplish it, I see no reason why shells could not move from the Philippines to the Virgin Islands. The North and South Equatorial Currents travel across the Pacific and Indian Oceans. When the larvae born on these currents reach Africa, they can follow the Madagascar or Agulhas Currents around Cape Town and pick up the Benguela Current north until it joins the (Atlantic) South Equatorial Current. This flow of water moves westward to South America where the Brazil arm splits off and travels south, while the main current travels northwest until it meets the Caribbean Current, which flows along the south side of Cuba and then curves around to the eastern side of Florida where it joins the Gulf Stream, the current where it all began, a few paragraphs ago. I haven't seen any specific studies to substantiate this theory, but it appears logical to me that such a voyage could occur.

Some of the teleplanic larvae, after crossing the oceans, find suitable habitats where they settle and mature, and reproduce. And occasionally another individual of the species comes along, sinks to the bottom, and finds its own kind, thus perpetuating the species, maintaining the genetic code of the original population, and expanding its range. If, however, the small new colony thrives but no additional specimens continue to arrive, the new environment undoubtedly will, over a period of time, cause a few adaptations to appear and a geographical subspecies will emerge. Or some species may have difficulty adapting to the new environment and no reproduction will take place; long before a similar individual arrives, the original one will have died. Then, only an occasional and probably dead specimen of that species will be found in the new area, and no new colony or subspecies will develop.

Much of the above has been confirmed, while some of it remains interesting probability. But it does offer a possible explanation as to why some species are very restricted in their range, and others are almost world-wide in distribution; it gives us clues about why a geographical subspecies develops in some cases, while in others only an occasional single shell is found in what seems to be the "wrong" place.

Last summer in Brazil I picked up a specimen of *Cymatium* (*Ranularia*) *gallinago* (Reeve, 1844). This species supposedly comes only from the Indo-Pacific. When something like this happens, your first thought is that someone purchased it at a shell shop and then accidentally dropped it where you found it. (That, of course, is forgetting how few shell shops there are in Brazil, and how few people would buy a faded, beach worn specimen with a broken siphonal canal.) But, when two other members of your group also find a not-that-great specimen of the same species, you realize that your little shell may have traveled a very great distance to arrive at this beautiful beach; it may indeed have been one of those "Far-Wanderers of the Sea."

OCEAN CURRENTS

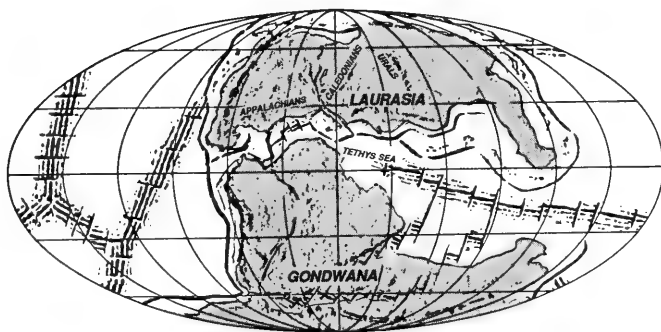


- A. Gulf Stream
B. North Atlantic Drift
C. Canary Current
D. Atlantic North Equatorial Current
E. Atlantic Equatorial Counter Current

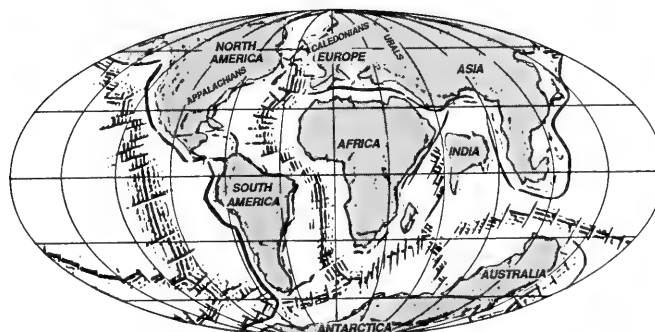
- F. Pacific North Equatorial Current
G. Pacific Equatorial Counter Current
H. Pacific South Equatorial Current
I. Madagascar Current
J. Agulhas Current

- K. Benguela Current
L. Atlantic South Equatorial Current
M. Brazil Current
N. Caribbean Current

ANCIENT WORLDS



125 MILLION YEARS AGO



55 MILLION YEARS AGO

REFERENCES

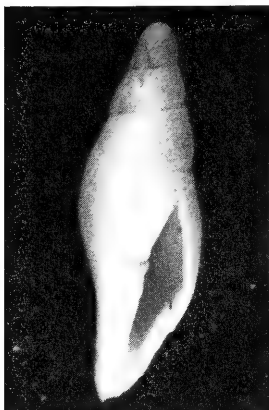
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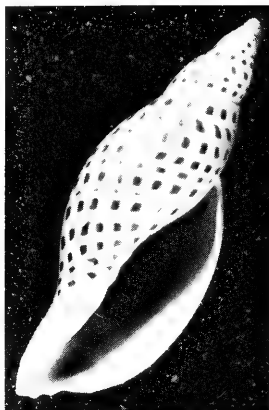
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CARIBBEAN VOLUTIDAE

by Kevan and Linda Sunderland



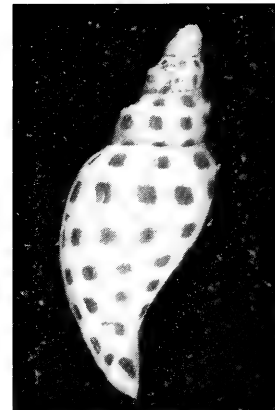
Scaphella aguayo (Clench, 1940). 45mm. 160 fathoms off St. Augustine, Florida.



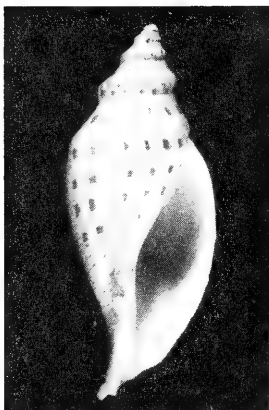
Scaphella dohrni Sowerby, 1903. 138mm. 130 fathoms off Key West, Florida.



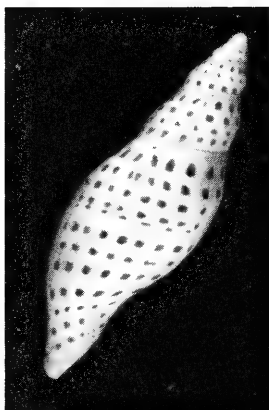
Scaphella dohrni atlantis Clench, 1946. 102mm. 80-100 fathoms off Sambo Reef, Florida Keys.



Scaphella dohrni bermudezi (Clench & Aguayo, 1940). 48 mm. 170 fathoms off Sambo Reef, Florida Keys.



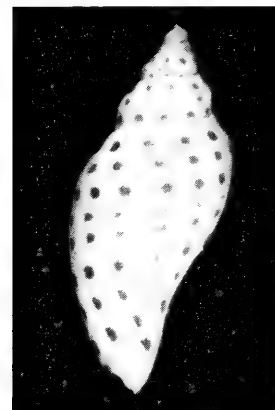
Scaphella dohrni cuba Clench, 1946. 88mm. 90 fathoms off Fowey Light, Florida.



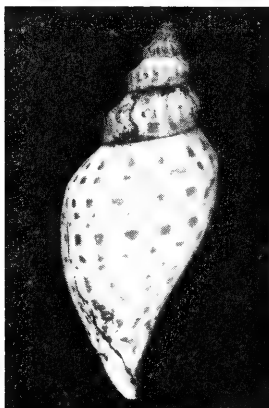
Scaphella dohrni florida (Clench & Aguayo, 1940). 113mm. 100 fathoms in crab trap, Islamorada, Florida.



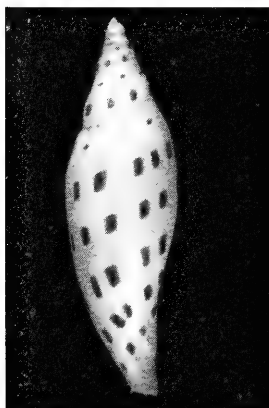
Scaphella dohrni gouldiana (Dall, 1887). 74mm. 180 fathoms by shrimp boat, off Cape Canaveral, Florida.



Scaphella dohrni marionae Pilsbry & Olsson, 1953. 43mm. 80 fathoms off Egmont Key, W. Florida.



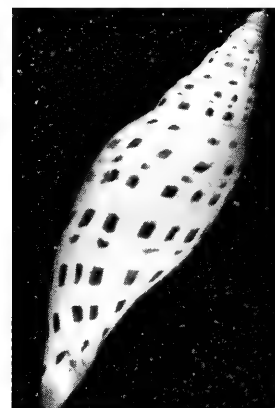
Scaphella dohrni robusta Dall, 1889. 93mm. 120 fathoms, central Gulf of Mexico.



Scaphella dubia (Broderip, 1827). 90mm. 110 fathoms west of Tampa Bay, Florida.



Scaphella dubia georgiana (Clench, 1946). 90mm. 70 fathoms off Palm Beach, Florida.



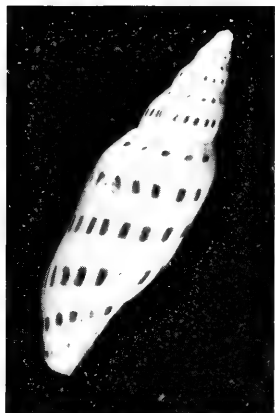
Scaphella dubia kieneri Clench, 1946. 130mm. 45 fathoms off mouth of Mississippi River.

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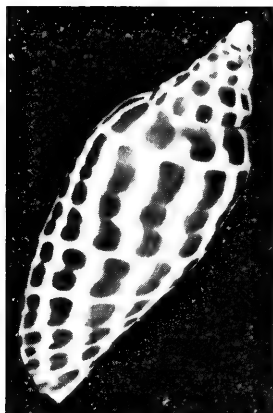
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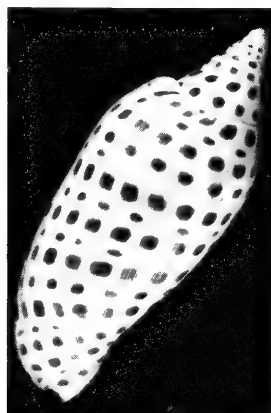
The intent of these centerfolds is not to distinguish between valid and invalid species, but to provide illustration of taxa not popularly available, for the information of the collector.



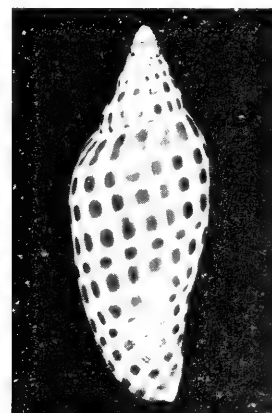
Scaphella dubia schmitti (Bartsch, 1931). 110mm. 70-100 fathoms off Dry Tortugas, Florida.



Scaphella junonia (Lamarck, 1804). 111mm. 200 feet off Key West, Florida.



Scaphella junonia butleri Clench, 1953. 120mm. 200 feet off Contoy Light, Mexico.



Scaphella junonia johnstoneae Clench, 1953. 89mm. 210 feet off Dauphin Island, Alabama.



Lyria archeri (Angas, 1865). 42mm. 70 feet in sand, NW Guadalupe.



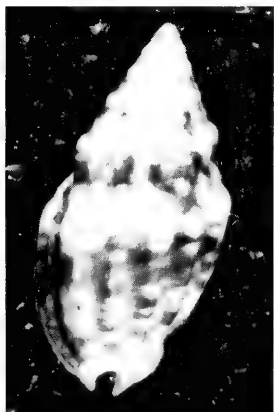
Lyria archeri beauii (Fischer & Bernardi, 1857). 58mm. 120-130 feet off St. Barts., Fr. Antilles. Syn: *archeri* (Cahill Coll'n.)



Lyria leonardi Emerson, 1985. 27mm. 80 fathoms off Grenada.



Lyria russjenseni Emerson, 1985. 55mm. 150 fathoms, Mayaguez, Puerto Rico. Paratype E. (Cahill Collection)



Enaeta cylleniformis (Sowerby, 1844). 21mm. 20 feet in sand patch in reef, Elbow Cay, Bahamas.



Enaeta guildingi (Sowerby, 1844). 17mm. 20-30 feet in sand in reef, S. Martinique. (Cahill Collection).



Enaeta leonardhilli Petuch, 1988. 19mm. Intertidal, Fernando de Noronha Island, Brazil.



Enaeta reevei (Dall, 1907). 15mm. 5 feet in sand, Utila Bay, Honduras.

Especially for Novices... WHY BOTHER WITH LATIN NAMES?

by Clarissa Stuart

A while ago, I was talking to a friend, also a sheller, about (what else?) shells. She said that she hadn't tried very hard to learn the Latin names used to identify shells because they were so foreign-looking, tough to remember, and even tougher to pronounce. How much easier it was to say "Heart Cockle" or "Oregon Hairy Triton" than *Corculum cardissa* or *Fusitriton oregonense*.

As a novice collector I had also wondered about this complex and sometimes confusing system used to identify the critters that so fascinate us. So I started exploring my books more closely, and I have learned a few things.

First I learned that all living things, plants and animals alike, are known to science by their Latin names.

Second, I learned that classifying living things was first attempted in the 4th century B. C. by Aristotle. He saw animals as falling into either of two main groups: those having red blood (corresponding to our modern vertebrates) and those without (invertebrates). He also viewed reproductive methods as reason to create sub-categories. His results were well-meaning, but certainly primitive.

It wasn't until the last half of the 17th century that John Ray, an English naturalist, came up with the concept of separate species. The word "species" is defined in Webster's *New World Dictionary* as "the fundamental biological classification, comprising a subdivision of a genus, and consisting of a number of... animals all of which have a high degree of similarity, can generally interbreed only among themselves, and show persistent differences from members of allied species: a species is the uncapitalized name in the binomial. "Okay. But what is a binomial? Out came Webster's again. A "binomial" is described as a two-word scientific name of a plant or animal.

Taxonomy (the word for this process of classification and naming) really began in earnest with the work of Carolus Linnaeus — yes, THAT Linnaeus — a Swedish botanist. In the 1750's, he introduced binomial nomenclature which calls each different creature by both **genus** and **species** (the first name being the genus, the second being the species).

As science advanced, this system was expanded and refined using evolutionary relationships, embryology, biochemistry and morphology (the general study of the animal's structure) to caste creatures within this "family tree."

Third, I learned that the major divisions in the family tree of the animal kingdom are called **phyla** (the plural of **phylum**). There are 20 phyla altogether; **phylum Mollusca** is the starting point for the shell-bearing branch of our tree. (It is interesting to me that the Latin word "mollusca" means "soft-shelled nut".) Each phylum is then divided into smaller groups called **classes**. Phylum Mollusca contains seven of these classes:

- 1) **Aplacophora** — wormlike shell-less mollusks covered with calcareous spicules; deep sea inhabitants; may not be mollusks.
- 2) **Polyplacophora** — bilaterally symmetrical shells with eight plates; chitons.
- 3) **Monoplacophora** — single dorsal shell with some signs of segmentation; known only from fossils prior to 1952.
- 4) **Gastropoda** — all snails, abalones, etc. having asymmetrically coiled shells.
- 5) **Cephalopoda** — squid, octopus, nautilus.
- 6) **Bivalvia** — all bivalves.
- 7) **Scaphopoda** — tusk or tooth shells.

Next, each class may contain **orders**; classes and orders are subdivided into **families**; families are split into groups called **genera** (the plural of genus); and finally, each group is broken down into its various **species**. Sometimes, **subclasses**, **subfamilies**, **subgenera** and **subspecies** are utilized. FIG. 1 illustrates the position of these categories relative to the primary groups. Notice that the genus name is always capitalized, but that the species is not.

When referring to a specific shell species, it is customary to include the name of the authority who first described the species, as well as the year in which this occurred. For instance, if we speak of the Australian Pheasant Shell, we say *Phasianella australis* (Gmelin, 1791).

Notice, also, that sometimes this name and date are enclosed in parentheses, sometimes not. When a shell is known today under a different genus name than the one under which it was originally described, parentheses are used to signal that fact. Cone names almost never have the author and date in parentheses because *Conus* is the name they've always been known under. But have a look at many of the Muricidae: early malacologists called them all *Murex*, but many genera have been added to this group through the years, and parentheses are common in species described before the 20th century. You don't need to remember these, but it is important to know there is a purpose to them, and that they aren't just randomly used.

Though these multisyllable words may seem an unnecessary burden on our lingual skills, something important occurs here: when we say *Phasianella australis* instead of "Pheasant Shell" or "Painted Lady Shell," or any of several other popular names, we have indicated exactly which shell we mean. The use of common names is fine in an informal situation. If, however, you order a Triton's Trumpet from a dealer, he will probably know that you want a specimen from the genus *Charonia*, but which species does he choose to send you? Additionally, values can vary widely according to the species in question, so being very precise when speaking or writing about shells is important to assure that you will get what you pay for.

(continued on page 17)

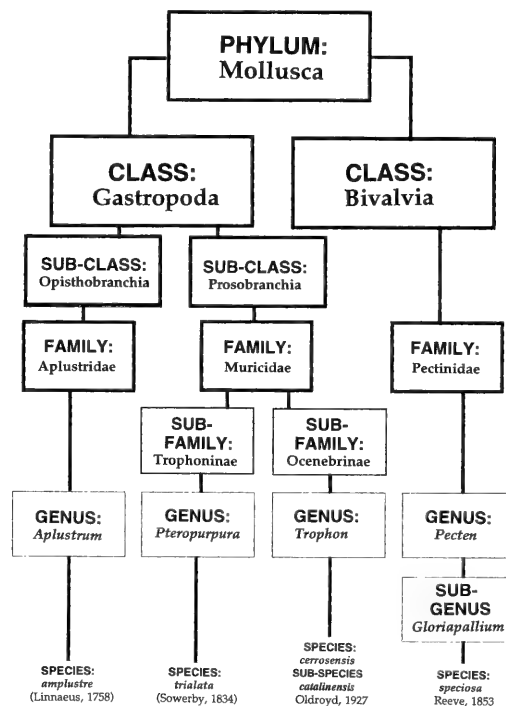


FIG. 1. This chart illustrates the relationship among four species of mollusk: *Aplustrum amplustre* (Linné, 1758); *Pteropurpura trialata* (Sowerby, 1834); *Trophon cerrosensis catalinensis* Oldroyd, 1927; and *Pecten (Gloriapallium) speciosa* Reeve, 1853. The Bubble Shell and the Trophon are more closely related than the Bubble and the scallop, but the Trophon and the Murex are even closer. Also to be seen — the relative positions of the various sub-categories: **subclasses** under class Gastropoda, **subfamilies** under family Muricidae, a **subgenus** under genus *Pecten*, and finally a **subspecies** shown under species *cerrosensis*.

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Or, consider what would happen if all Japanese dealers knew their shells by Japanese names, and all South American dealers knew their stock by Spanish or Portuguese names, and so on. What a MESS! Doing business from country to country would be impossible. So we come back to this binomial Latin nomenclature.

Since Latin is a "dead" language, one which doesn't undergo changes like our own "living" language, it is the perfect constant for usage in the world-wide scientific community. Think of a collector as a ham radio operator: in order to carry on a productive conversation he MUST be tuned to the same "wave-length" as the person on the other end of the connection. These formerly intimidating and complicated names become the sheller's common ground — our "wave length" — helping us to act intelligently where our favorite pastime is concerned.

And remember, pronouncing these Latin words is not nearly as important as familiarizing yourself with them. Remember too that many species names are only a single letter different from others that may be

radically different in form, making correct spelling of paramount importance.

One additional item: next time you are poring over your shell books, take a closer look at some of the individual Latin words in the shell names. You will see how strong an influence this ancient language has on our very own language. Take the word "gastropod" — *gastro* means "stomach," and *pod* (from *poda*) means "foot" — "stomach-foot." Pretty descriptive, if you ask me. Keep looking. *Cephalo* means "head"; combine this with *pod* and you get *cephalopod*, a creature that is all head and feet — an octopus. *Digitata* means "fingered," *chrysos* means "golden," *pulcher* means "beautiful," *ovum* means "egg," *ocellata* means "eye-like spots," and so on. You do not have to be an expert linguist to pick out some of these root meanings, and once you see how many appear in molluscan names, perhaps you'll even begin to make some sense of them.

And some more about names, this time from the pen of Jim Brunner and the pages of the Gulf Coast Shell Club Newsletter, *Shell and Tell* V. X (4) :5-6.

IS ALL THIS NAME CONFUSION REALLY NECESSARY?

by Jim Brunner

Well, they're at it again! At the COA Convention we learned that *Naquetia barclayi* should be renamed as *Naquetia annandalei*. Earlier this year there was a proposal that all members of the genus *Murex* with bent siphonals should be renamed as *Haustellum*. Before that there was a controversy over whether *Chicoreus artemis* should be *Chicoreus aculeatus*. And before that there was the question, "Should it be *Hexaplex* or *Chicoreus* for a species named *cichoreum*?" In issue after issue of **Hawaiian Shell News** you find pages of arguments over whether this cone should be called by this or that name. This happens locally also. Right now the discussion centers on whether the deep water olive found here should be called *Oliva reticularis*, a name that everyone has been comfortable with for years, or should be changed to *Oliva bifasciatus* ... I know exactly what you are thinking: "What's the matter with these guys? Can't they make up their minds? Everytime I finally learn a Latin name they change the dang thing! I should have collected stamps!"

If you feel this way, you aren't alone. You've hit upon what is undoubtedly the number one source of frustration for shellers, no matter what their degree of sophistication — and probably the main reason most people give up the hobby. So this isn't a small issue, or one confined solely to you. The question of why the bigwigs can't get their act together affects all of shelling. The answer isn't so simple! There are dozens of reasons why it is difficult to arrive at a name for a shell and have that name stick. I'll confine myself to the two biggest ones here.

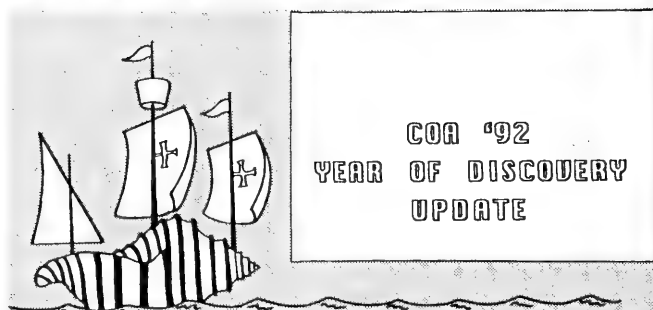
The first reason is that shells aren't coins or stamps (I was going to use the proper name for these hobbies, but I always get them mixed up with philosophers and ancient magicians). A coin is a coin and a stamp is a stamp. If they're clear enough to read, you know exactly what you've got. There may be some discussion as to the quality of the specimen (actually there is a LOT of discussion as to the quality) but not about its name. I've never met a stamp collector who was concerned about whether a particular prize was a cross breed between a 10 cent and a 15 cent stamp, thus making it a rare and costly 12.5 cent stamp. No, a 10 cent is a 10 cent. Ah, but were it that way with shells! Unfortunately their little generic printing presses don't run as efficiently as do those of national governments, and each one gets his colors and shape and texture a little different from the next one in line. Along comes man and, depending upon how significant he feels these differences are and how consistently they appear from one shell to the next, he either lumps them all into one species or splits them up into several. Along comes another person and sees them just the opposite way and relumps or resplits as appropriate. So a major part of the problem here is not that man doesn't have his act together, it's that the shells don't. If they were just a little more disciplined and a little less promiscuous, we wouldn't have all these problems.

While it would be nice to blame the whole problem on the shells themselves, the truth is that they know who they are — it's man that gets

them confused. And the reason for the confusion is that we have a less than perfect system for identifying and naming shells. The scientific side of shelling, the malacologists, are the ones largely responsible for putting the proper names on shells. But they are part of the scientific community, and in that community the procedure followed is to do extensive research, publish your findings, and let others take pot shots at them. If the research is valid it will hold up under such tight scrutiny — if not, it won't. Eventually a consensus is reached among the scientific community and the data is generally accepted. If the community is large and the journals are many, as in physics or chemistry, this process is relatively quick. If it is small and the journals are few, as in malacology, it can be very, very slow. In the early part of this century William Dall threw out a large number of genera named by Lamarck in favor of those named by Roding in 1798. It threw the malacological community into an uproar, but the names stuck because the research was good. What it boils down to is that there is no Supreme Court of Malacology. The International Commission on Zoological Nomenclature, which some might regard as such, is concerned with the mechanics of shell naming rather than the scientific merits of a particular name. The true court system is the court of scientific opinion, which, as noted, is quite slow and inexact in handing down a verdict.

What does all this mean to us, the hod carriers of the shelling world? First it means don't get frustrated! Anyone who has been collecting shells for any time at all recognizes that this name confusion business is part of the game; just because someone uses a name that you don't, that doesn't make your identification invalid (I, for one, intend to call it *Oliva reticulata* for a long time to come). Second, it means that name confusion happens to everyone. I've listened to two distinguished malacologists discussing a shell with one using one name for it and the other another name — and yet both knew exactly what species they were talking about. Third, it means that while no shell's name is set in concrete and is immune to challenge, those that have weathered thirty or forty years of the evaluative process probably aren't going to change. Those that were named last year are on shaky ground. Finally it means that you shouldn't be afraid to exhibit a shell just because you aren't sure of the name. All judges realize that there is controversy and confusion about the various names. On your label just put down your best guess as to the name and stick in an extra line that says, "Some authors have identified this shell as '*piece of junk*' and you're covered."

Confusion in shell names is part of the game and I'm informed that at some point in shelling you get beyond it. The ironic thing is that names have little to do with the reasons why the average collector goes about gathering shells. Fascination with their beauty is that reason and beauty needs no name.



In celebration of our 20th Anniversary Convention the U.S. Postal Service has agreed to set up a postal station at our bourse on Friday, July 31. They have approved the above unique cancellation of our Neptunea in full sail, plus the convention logo on an envelope. These designs are the work of our talented member artist Sharon Snyder. Naturally the commemorative Columbus stamps will be utilized to complete this special cover. This is a one-day one-time opportunity. Normally this offer would only be available to those at the convention, but if you cannot join us you can still order one or more. For \$2.00 each you can order this special cover to be mailed to you on July 31, 1992. If you want unaddressed covers, please include a self-addressed stamped envelope large enough to contain your covers.

If you plan to drive to COA the Marriott has plenty of parking space available VERY close to the lobby and hotel registration desk. Valet parking service is available; however, you will probably not need it once you have checked in.

The gratuity of \$3.00 for the bellhop and \$3.00 per day maid service for rooms is a standard charge for most hotels of this caliber and will be added to your hotel bill, so tipping the bellhop and the maid is not necessary.

Besides the rooms listed on the registration envelope from the Marriott, suites are available at the special rate of \$125.00 for a one-bedroom and \$185.00 for the two-bedroom suite. Contact the hotel direct (1-800-228-9290) if you are interested.

If you are flying into Jacksonville International Airport, it is approximately 45 miles to our convention site at Sawgrass. Should you choose to rent a car there, the Alamo Rent-A-Car Company is providing us a group rate. You can call them at 1-800-732-3232, but you MUST use our COA group ID #243206 and request rate code GP, then add 7G for lowest rate. They have low daily and weekly rates on six different-sized cars and all mileage is free.

There is a courtesy telephone booth at the airport in the baggage claim area for the local Alamo location and a shuttle bus arrives there every ten minutes. There is also a limo/shuttle service to the Marriott available through Bob's Limo Service. Their charge is \$15.00 per person each way. It will be necessary for you to contact them in advance and give your airline, flight number and time. Call 1-904-241-1013. Or Beach Shuttle Service is \$35.00 plus 15% gratuity for two people. Call 1-904-241-7632.

When you arrive at the COA registration desk, you will be given a folder which contains your COA material: convention badge, banquet and tour tickets, Program book, Auction list, etc. You will also receive a "goodie bag" with maps (of the area and of local shelling), list of restaurants with prices, pens, and lots of surprises.

The hotel has a variety of restaurants that offer everything from hamburgers and hotdogs to gourmet dining. Within walking distance are three excellent restaurants: a seafood restaurant serving lunches of salads, sandwiches and seafood specialties from \$4.00 to \$7.00, and dinners from \$9.00 to \$14.00; Gio's Italian has dinners from \$11.00 to \$19.00; O'Sheehans, Home of the Gourmet Burger, offers lunch specials and dinners — some of their specialties include burgers (ten different kinds), sandwiches, platters, soup and salads — prices are from \$3.25 to \$10.95. This restaurant is giving 20% off your bill for COA conventioners! A major grocery store and deli with prepared salads, sandwiches, and bakery items, is only a block away from the hotel.

And don't forget the "Hospitality Villa" located near the pool, where you are welcome to visit with friends and have a complimentary coffee, soda or snack.

The SMOKING POLICY for the COA is as follows: there will be no smoking during any of the programs, meetings, work-shops, bourse, or ID Clinic. For the Banquet, a smoking section will be provided. There are also plenty of other areas at the Marriott that allow smoking, such as the lobby, decks, pool area, hospitality villa, bars, restaurants, etc.

As always, COA will have a raffle of rare shells and/or collectible items. Tickets may be purchased by mailing advance (amounts of \$5.00 or more) and the cost is \$2.00 per ticket or three for \$5.00. A ticket gives you a chance of winning any of three WONDERFUL prizes. The drawing will be held at the COA Business Meeting. **YOU DO NOT HAVE TO BE PRESENT TO WIN.** Prizes will be mailed FOB to those not in attendance. Help COA by purchasing chances even if you cannot be at the convention this year. Send checks to: COA Convention, P.O. Box 332, Mayport, FL 32267 and your ticket stubs will be sent back to you in return mail.

The auction donations are slowly coming in. **NOW IS THE TIME TO SEND YOUR DONATION!** Please be generous and help COA to fund its Grants Program.

Your Convention Committee is excited and busily preparing for your arrival. **SEE YOU IN JULY!**

DONATE TO THE COA AUCTION NOW!

YOU can make a difference to the science of Malacology! Our annual COA Auction is the source of funding for COA's very important Grants and Scholarships Program. Each year, COA awards deserving students and scholars money to pursue their malacological projects. Without this money, which funds expenses incurred in their research, many of these projects might never be completed. We want to continue the program and to continue to increase the number and amount of our grants. But we can't do that without YOU!

Your donations of shells and books, of shelly collectibles and shell-related items are what makes our auction work. And your support of that auction at the Convention completes the cycle.

Search through your collection for worthy duplicates with data. Look around for other items which may bring a good price at the auction. Send them to the Jacksonville Shell Club for the Auction. Then COME to the Convention! We want you and we need you. And you'll love it, we guarantee. While you are there, join the spirited bidding that always accompanies the annual Auction. You'll acquire great shells for your collection and benefit a student and malacology in the bargain. If you can't come to the convention, send your donations anyway. And while you're at it, send some money with a friend who's coming to the convention... he's sure to pick up some treasures for you at the auction. **Mail all donations to Charlotte Lloyd, P.O. Box 332, Mayport, Florida 32267.**

BOARD TALK...

From **Treasurer WALTER SAGE**: We are very pleased that our efforts to attract new members to COA are paying off — we are well on our way to adding 100 new members to the roster during the first six months of 1992. We are also making progress in retaining current membership, but must report that we still have 150 memberships that have not yet been renewed for 1992. We plan to contact these people again, and will have a report on our success at the Jacksonville convention. Once again we remind you that issues of the **American Conchologist** are mailed to United States addresses by U. S. Bulk Mail, and these are forwarded only at the whim of postal employees. So we ask you, in order to avoid unnecessary delay and expense in receiving your issues, to please let us know as soon as possible when there is any change in your mailing address.

A new supply of COA lapel pins has been ordered and will be available at the Jacksonville convention. At this writing, we have not determined the selling price, so please do not send any money until we let you know what the price will be. Mail orders will not be accepted until after the Jacksonville convention. We have been given the last 19 pins from the old Fort Myers Shell Club, and these will be available at the Jacksonville convention also. Again, the price on these has not been established, so you'll have to come to the Jacksonville convention if you want one of these pins.

From our **Historian LUCY CLAMPIT**: Who founded COA? When and where was the first meeting held? What was the name of the original COA publication, and who edited it? Who won the first COA Trophy? When were the first financial grants awarded? How did convention traditions such as the door prizes and the bourse get started? Find the answers to these questions and many others in the COA History to be published this summer. Did you know that the convention was once held at a hotel with a *Pecten* logo?

The history is being published to help celebrate COA's 20th (or is it 21st?) birthday. We hope it will evoke happy memories for long-time members and help new members become better acquainted with our organization. Attendees at the Jacksonville Convention will receive a copy in their convention packets. If you are unable to attend, you may obtain a copy after the convention. Send \$2.00 to cover copying and mailing to **Lucy Clampit, Historian, 10532 Hammerly, Houston, TX 77043**.

Did you know that the 1973 convention was held in Freeport, Bahamas?

American Conchologist is mailed via **BULK MAIL**. Bulk mail is not forwardable, and if undeliverable, will be thrown away by the post office. If you move and do not notify us of your change of address, your magazine will never reach you, and we will not know that it didn't. Please send your change of address to Membership Chairman Bobbie Houchin.

NEW BACK ISSUE PRICES
(effective March 1, 1992)
1973-1984 \$1.50 per issue
1985-Present \$3.00 per issue

OOPS!

Corrections to Bouchet Article

Our apologies to Philippe Bouchet. In his March 1992 article, "Extinction and Preservation of Species in the Tropical World: What Future For Mollusks?" the printers took it upon themselves to rearrange page 24. The result was chaos. The photo of *Partula elongata* at the bottom of the left hand column belongs at the top of the right hand column, with its own caption, "Fig. 7. The endemic *Partula elongata* from Moorea, now extinct." The photo at the top of the right hand column, a close-up of the Baillieu achatinella collection, belongs at the bottom of the left-hand column, below its companion photo and caption. And we might add, the *Partula elongata* photo has been "flopped"; its negative has been placed wrong side up so that the shell incorrectly appears to be a sinistral species. It is a dextral species. Also, on page 21 of Bouchet's article, the last line of the caption, upper right, has been nipped off, no doubt by the same gremlin who scrambled page 24. It should read "...extinction rates on the planet"! (Photo G. Richard)

South Alabama Shell Club

We received the following letter from Doug Shelton, Vice-President of the South Alabama Shell Club, correcting several errors in the March column, "Our COA Clubs — A Closer Look," by Nancy Gilfillan. The author, Nancy Gilfillan was in no way to blame for the errors; the Editor assumes responsibility. Our sincere thanks to Doug Shelton for his very diplomatic correction of the matter. And our most humble apologies to South Alabama Shell Club founder, Shirley Dennis. Her achievement is an impressive one — any time one human gets two or more other humans to walk in the same direction for more than 30 seconds, he's beat the odds. When he (in this case, "she") gets a whole group to cooperate to the extent of forming a club, he's batting 1000. When that club lasts longer than three meetings, the world should sit up and take notice. Bravo, Shirley! We're all proud of you, even though we fouled up the details.

I want to thank you for the excellent job you do editing **American Conchologist**. It is really a superb magazine. I particularly want to thank you for the article you did about our club.

I am not sure where the information came from, but I would like to offer corrections to several errors about our club:

- 1) The original name of our club newsletter was the **Junonian**. After learning that name was in use by another club, our membership voted to change the name of our newsletter to the **Johnstonian** (not **The Johnstonian**), in honor of Kathleen Yerger Johnstone and the late Harry Inge Johnstone.
- 2) The president of our club is Ron Clark, not Ron Knight. Ron has only recently begun collecting land shells, about the time he began his work in Papua New Guinea.
- 3) The founder of our club is Shirley Dennis, not Doug Shelton. Shirley also serves as Secretary and Editor.

Sincerely,

Doug Shelton, Vice-President
South Alabama Shell Club

Coa Grant Helps Scallop Study

Mysterious massive die-offs of the edible calico scallop of the east coast of Florida are being studied through the help of a small COA grant made to William Arnold at the Florida Marine Research Institute. Arnold reports that a ciliate protozoan is infesting millions of scallops and has caused two big die-offs and closures of the fishery, first in 1989, then again in 1991. Other bottom-dwelling animals, such as rock shrimp, crabs, mollusks and fish, have also been affected.

Arnold states that laboratory chemicals bought through our small grant have assisted in the analysis of 270 samples for protein, carbohydrate and lipid content of various parts of the soft anatomy of the scallop.

—R. Tucker Abbott

BOOK REVIEWS

Marine Prosobranch Gastropods from Oceanic Islands off

Brazil by Jose H. Leal, 1991. 418 pp., 25 pls., maps, charts, paperback. U. B. S., Publ., Holland. Distributed in the U. S. by American Malacologists, P. O. Box 1192, Burlington, MA 01803. \$74.00, postage paid.

In a thoughtful and detailed analysis, Dr. Leal, a recent graduate of the University of Miami, has discussed the origins and development of the marine molluscan fauna, not only of the small chain of islands off the coast of Brazil, but also the main Caribbean Province. He presents maps of ocean currents, geological plate movements and the distribution of so-called "hot spots" in the floor of the South Atlantic Ocean.

The author discusses the importance of the modes of growth and development in the protoconchs of prosobranch gastropods in determining the relationship of the fauna of the offshore islands and banks with those of the Brazilian mainland and the Antilles to the north. He explains and illustrates the differences between planktotrophic larval types and non-planktonic forms. He presents in a table the development type, bathymetric level and insular distribution of 297 marine gastropods. Especially useful to students of oceanography and plankton, as well as to serious Caribbean shell collectors, are 25 plates with numerous scanning electronic microscope photographs of young stages and protoconchs.

A large bibliography serves as a useful guide to the pertinent literature on South Atlantic malacology and marine zoogeography.

—R. Tucker Abbott

*Dr. Leal received a 1989 COA Grant to assist him in this work on the fauna of offshore islands. His article on the subject, "Tales from Oceanic Islands: The Biogeography of Insular Marine Gastropods from off Brazil," including some of his excellent SEM photographs, appeared in the December 1989 *American Conchologist*. Readers who enjoyed his article will certainly wish to further pursue the subject in this book. Ed.

Guidebook to Pecten Shells — Recent Pectinidae and

Propeamussiidae of the World by A. Rombouts. Edited and revised by Henry E. Coomans, Henk H. Dijkstra, Robert G. Moolenbeek, and Peter L. van Pel; photographs by P. L. van Pel. 1991. Universal Book Services, Netherlands. ; xiv + 157 pages, 29 color plates. \$40.00.

This long awaited volume is promoted as "... the first book since 1888 to cover all recent species of the world. In the family Pectinidae almost 300 (sub) species are treated, of which more than 200 are illustrated. Of the mainly deep water Propeamussiidae, more than 100 species are discussed and the common ones figured. Synonyms are given, many formae are mentioned, and a glossary of terms for the morphology of the scallop shells is added. Since the book is published posthumously, the new genera and species described during the last five years are enumerated in an appendix prepared by the editors. They also produced the references, the index and the 29 colour plates. The illustrations were photographed from representative specimens with locality data of Rombouts' collection (presently in the Zoological Museum, Amsterdam) and some other collections."

Following an explanatory foreword by Dr. Coomans and an introduction by the author, there are 63 pages of text on Pectinidae, 18 pages on Propeamussiidae, 6 pages of references, 3 pages of new taxa (without references), 51 pages of plates and plate captions, and a 5 page index. This commentator, admittedly not a pecten specialist, would prefer to have more description and comparison of similar species. I find it difficult to identify specimens using the text — the plates are generally of good quality, and do help in identification. It is a shame that so many species, especially in the Propeamussiidae, are discussed but not figured.

In my using the book, a number of questions and problems have come to mind, and I include a short list of these here: 1) Is *Decatopecten* Swainson, 1840 a junior synonym of *Decatopecten* Sowerby, 1839? 2) Where is mention of the name *loxoides* Sowerby, 1882, and is this an earlier name for *Haumea juddi*? 3) Under *albicans* Schroter, 1802, the synonym *laqueatus* Sowerby, 1842 is omitted. 4) The correct date for *yessoensis* Jay is 1856. 5) Explanation is needed for the replacement of *nobilis* Reeve, 1852 with *crassicosata* Sowerby, 1842. 6) The treatment

of the three *Mirapecten* species is confusing to me and the illustrations are too similar for easy identification. 7) Explanation is needed for the placement of *subnodosus* in *Lyropecten* and *nodosus* in *Nodipecten*. 8) The correct name is *novaezelandiae* Reeve, 1852, not *novaezelandicus*. 9) Should not the omitted *melica* and *rena* of Iredale be listed as synonyms of *leopardus* Reeve, 1853? 10) *Tissoti* Bernardi, 1858 is not treated in the text.

This book cannot be claimed to be a scientific monograph of the Pectinidae — too many names have been left out, and too many named taxa are unfigured. I would have preferred that the book concentrate on a complete and much more detailed treatment of the Pectinidae and that the Propeamussiidae be saved for a later companion volume. Copies of the original color illustrations of the Reeve and Sowerby species not included in the plates would surely have added to the value of this volume. It would have been preferable to have included the citations for the original descriptions so that interested persons could do further research. The book would be much more usable had the new names introduced since 1985 been included in the body of the text and added to the plates. In short, this volume is a short step in the right direction, but much more work must be done before we have a definitive book on the Pectinidae.

For a review of this book by a collector specializing in the Pectinidae, I refer you to the following comments. Carole Marshall's remarks are well considered and should help in deciding how useful the book will be.

—Walter Sage

The following review appeared in the April 10, 1992 *Seafari*, the newsletter of the Palm Beach County Shell Club, Inc. The author, Carole Marshall is a pecten collector, the most demanding critic of a book on pectens.

Pecten Patter

by Carole P. Marshall

Since this column is all about pectens, I thought I would give you my opinion on the new pecten book that has just come out. It was written from notes left by Antonius Rombouts, now deceased, and most of the shells in the book are from his collection. The collection now resides in the Zoological Museum, University of Amsterdam. It is called **Guidebook to Pecten Shells** and I think you are going to like it. I had mixed emotions about the book when I first saw it, and if you are a serious pecten collector, you are going to be disappointed. If you collect cowries, murexes, cones or others and happen to have pectens too, it is a good book, and I think most collectors are in that category.

Some of the things that I liked were the fact that all species that are shown of one genus are grouped together, and, for the most part, pictured close to each other. This is good in showing generic similarities. There is still a lot of discussion in pecten circles as to whether the true generic names should be used, and even over what they are — after all, a *Chlamys* is a *Chlamys* is a...! I personally feel, however, that the distinction should be made as to *Zygochlamys*, *Mimachlamys* and *Chlamys* etc. and for that this book is very good.

This is not a good book if you really want to count ribs, check microsculpture, find out where the original description was published, or where the holotype is, or you want to get into some serious identification or study. I absolutely did not like the naming of shells that were not pictured. The descriptions accompanying the names did nothing to help in identification, and, as far as I can tell, some of those names of species listed but not pictured may be synonyms of other valid species. I would also like to have seen some of the rarer species that were listed. If that information is not in a book of this type, you would have to find the original literature, and even in the original descriptions the shells were often not pictured.

I did like the little notations at the bottom of some of the species, giving additional information of various kinds, and I did like most of the photo plates. There was also a decent picture of *Decatopecten lamberti* alias *D. gregoryi*. Unfortunately the gremlins got into Dr. Abbott's **Compendium** and *D. aurantiaca* was misnamed as *D. lamberti*, and

(continued on page 21)

some dealers were selling *D. aurantiaca* which was pictured as *D. lamberti* for *lamberti* instead of *aurantiaca* which it really was. So now maybe that will be cleared up.

Some of the individual pictures in the **Compendium** were clearer than those in the new book, but between the two books there should be all the information the average collector needs. My recommendation is that if you have less than thirty-five or forty pectens in your collection, don't buy it because you can find the information in another book. If you have more than that you will probably buy it anyway and hope that someone writes a really good pecten book someday.

*932 Cochran Drive, Lake Worth, FL 33461

SOURCES OF INFORMATION ON MOLLUSKS — SMITHSONIAN INSTITUTION

How many of you have seen the notice on our COA membership application that this free, 42 page brochure is available? It is an excellent little booklet, listing shell books, shell clubs, book dealers, major public shell collections and sources of film and photographs on shells. If you would like a copy, do NOT write to the National Museum of Natural History, but to the following address: Public Inquiry Mail Service, Smithsonian Institution, 1000 Jefferson Drive SW, Washington, DC 20560.

News from New Caledonia

Let's go with the good news first: The Conchological Association of New Caledonia (L'Association Conchyliologique de Nouvelle Calédonie, B.P. 8249, Noumea Sud, New Caledonia) is having a shell show in September. If melanistic *Cypraea* are your thing, this is THE place to see them. You cone and pecten fanciers will find a lot to interest you too. The New Caledonia shell shows are similar to our U.S. shows, with exhibits by club members and visitors. For more information, write directly to the above address.

And now to the bad news: After 53 issues, the very colorful New Caledonia shell publication, **Rossiniana**, will begin publishing only two issues a year instead of the customary four. This well-known bilingual publication has done lengthy series on the *Conus textile* complex, and on the pectens of New Caledonian waters in recent years. The work load, declining membership, scarcity of volunteers and increasing costs of printing and mailing have caught up with them. The first 1992 issue appears this month.

IN MEMORIAM

Mary Botts
John Boyd
John Evans
Jean Redding

WESTERN SOCIETY OF MALACOLOGISTS

The Twenty-fifth Annual Meeting of the Western Society of Malacologists will be held at Asilomar, Pacific Grove, California from June 30 to July 3, 1992. In addition to regularly contributed papers, the agenda will include symposia on Opisthobranchs, and Cocos Island, Costa Rica, a shell auction and banquet. For further information please contact WSM President David K. Mulliner (5283 Vickie Drive, San Diego, CA 92109; (619)488-2701) or WSM Treasurer Henry W. Chaney (Museum of Natural History, 2559 Puesta del Sol Road, Santa Barbara, CA 93105; (805)682-4711, ext. 334). Abstract deadline was 15 May, 1992.

AMERICAN CONCHOLOGIST DOES NOT PUBLISH NEW
SPECIES DESCRIPTIONS OR TYPE DESIGNATIONS.

1992 SUMMER AND FALL SHELL SHOWS AND MEETINGS

- | | |
|-------------------|--|
| Jun. 30 - Jul. 3 | Western Society of Malacologists Annual Meeting
Monterey, CA
Dr. Henry W. Chaney
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara, CA (805) 682-4711 |
| Jul. 10-12 | Hawaiian Malacological Society Shell Show , Honolulu HI
Hawaiian Malacological Society
P.O. Box 22130
Honolulu, HI 96823-2130 (808) 734-3703 |
| Jul. 18-19 | Pacific Northwest Shell Club Shell Show , Gig Harbor, WA
Nunsia Orr
18210 59th St. S.E.
Snohomish, WA 98290 (206) 481-4233 |
| Jul. 25-26 | Keppel Bay Shell Show , Yeppoon, Queensland
Jean M. Offord, 277 McDougal St.
N. Rockhampton, Q'ld. 4701 Australia (79) 28-3509 |
| Jul. 27-31 | Conchologists of America Convention , Ponte Vedra, FL
Charlotte Lloyd, P.O. Box 332
Mayport, FL 32267 (904) 246-0874 |
| Aug. 2 - 7 | American Malacological Union Annual Meeting
Sarasota, FL
Dr. Robert C. Bullock
Dept. of Zoology, U. of Rhode Island
Kingston, RI 02881-0816 (401) 792-2372 |
| Aug. 8 - 9 | Townsville Shell Show , Townsville, Queensland
Von Vandenburg, 12 Lillipilli St.
Vincent 4814, Townsville, Q'ld., Australia ... (77) 75-6275 |
| Aug. 15 - Sept. 7 | Oregon Shell Show , Portland, OR
Maxine Hale, Show Chairman
347 NE 136 Ave., Portland, OR 97203 (503) 644-2020 |
| Aug. 20-22 | Jersey Cape Shell Show , Stone Harbor, NJ
Jersey Cape Shell Club, P.O. Box 124
Stone Harbor, NJ 08247 (609) 653-8017 |
| Aug. 22-24 | Pacific International Shell Show , Cairns, Q'ld
Chris Oates, House of 10,000 Shells
32-34 Abbott Street, Cairns, Q'ld, Australia .. (70) 51-3638 |
| Aug. 29-30 | Gulf Coast Shell Show , Panama City, FL
Linda & Jim Brunner, P.O. Box 8188
Southport, FL 32409 (904) 256-5557 |
| Sept. 19-20 | International Shells & Fossil Bourse , Ottmarsheim, France
Michel Rioual, 2 Rue des Vergers
68490 Ottmarsheim, France 89-26-16-43 |
| Oct. 16-18 | Annual German Shell Fair , Bochum, Germany
Michael G. Trippner, Dr. C. Otto Strasse 134
Ottmarsheim, France (234) 412-345 |
| Oct. 16-18 | North Carolina Shell Show , Wilmington, NC
Dean Weber, 510 Baytree Road
Wilmington, NC 28409 (919)799-3125 |
| Oct. 31 | British Shell Collectors' Club Shell Show
London, England
Kevin Brown, 12 Grainger Road
Isleworth, Middlesex TW7 6PQ, England ... (81) 568-8333 |
| Nov. 7 - 8 | Philadelphia Shell Show , Philadelphia PA
Al Schilling, 419 Linden Ave. (215) 886-5807
Glenside, PA 19038 (or 1-800-274-8530, toll free) |

AMU IN SARASOTA

The 1992 annual meeting of the American Malacological Union will be held in Sarasota, August 2-7, just after the COA Convention in Jacksonville concludes. If you have never gone to an AMU convention, this is a great opportunity to experience one. There'll be two symposia, "The Biology of Caribbean Mollusks," organized by Dr. Rudiger Bieler, and "Advances in Gastropod Phylogeny," organized by Dr. Terrence Gosliner. As well as the usual Auction, Dealers' Bourse, and Banquet, the convention offers Open House at Mote Marine Aquarium, and five field trips: Shallow Water Habitats aboard the "Carefree Learner," with COA's own Peggy Williams, Freshwater and Terrestrial Habitats with Fred Thompson and Kurt Auffenberg, Fossiling at the DeSoto Pit with Warren Allmon, the Marie Selby Botanical Gardens, and the Ringling Museum. The convention headquarters is the Sarasota Hyatt. For further details, write or call **Dr. Robert C. Bullock, Department of Zoology, Biological Sciences Building, University of Rhode Island, Kingston, RI 02881. (401) 792-2372. Fax (401)792-4256.**

SHELL MUSEUM MUSINGS

by R. Tucker Abbott, Ph.D.

Mollusk Research and Re-search

Dr. Abbott, director of Sanibel's Bailey-Matthews Shell Museum, contributes a weekly column to the Sanibel-Captiva Island Reporter; he has kindly given us permission to use this column, originally published in the May 15 edition, because of its mention of COA and our Grants Program, and because of the great importance of the subject to all of us.

There's a difference between research and re-search. This column comes under the category of re-search. We are attempting to give out information by combing past records and publications, sometimes drawing from our own experience and knowledge. This is re-search, not true research.

Scientific investigations and experiments that seek out new facts are research. If there appears to be no immediate usefulness or if it is adding to fundamental understanding, we call it basic research. If it attempts to solve a practical problem or have some immediate economic value, we call it applied research.

The Bailey-Matthews Shell Museum is primarily a source of natural history information, not a scientific research center, although we are strong advocates of much-needed true research. With our attention focussed on raising funds to complete our new building on San Cap Road [Sanibel Island, Florida], we are not yet in a position to assist others in carrying out research.

Fortunately, there are several organizations already doing much to support mollusk research. Among them are the Sanibel-Captiva Shell Club, the Sarasota Shell Club, the Astronaut Trail Shell Club in Melbourne [Florida], to mention only three of the dozen clubs in the United States that grant hundreds and thousands of dollars to worthy research projects of graduate college students.

For years I have been Chairman of the Grants Committee of the Conchologists of America, a national group of shell enthusiasts. Each year our committee, consisting of a representative from each corner of the nation, goes over dozens of applications in order to select the best four or five to share in the \$5000 annually available. We judge the requests on the basis of the scientific quality of the project, the reasonableness of the expected expenditures, the quality of the investigator, the need for financial support, and, to a lesser degree, the geographical location of the student or worker's institution.

There are two reasons to support research. The most obvious is that it is increasing man's knowledge about himself and his surroundings. Mollusks may be a small part of the parade of nature, but the facts discovered and the lessons learned from them apply to every creature and to every environmental principle.

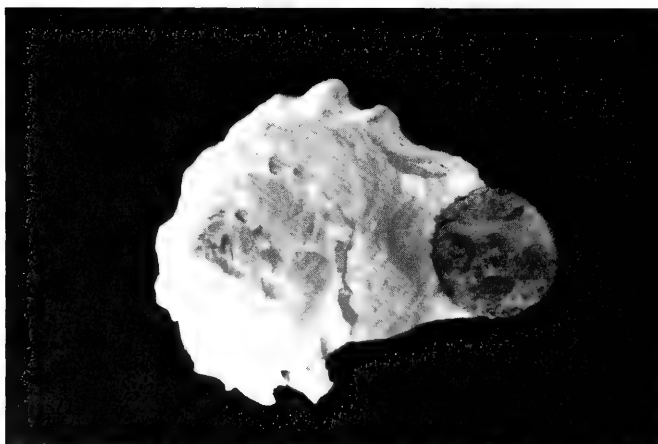
The second reason has an even more immediate and compelling nature. The funding of research, particularly by students, is really the funding of the students themselves and therefore supports the scientists of tomorrow. Without this necessary support at a critical time in their early careers, especially in these unsettled times, many a student would fall by the way as their research projects withered on the financial vine. Thank goodness for the support from the Conchologists of America and the shell clubs, small as it may be.

Let us take a look at some of this Spring's requests. A student from Colombia, South America, and a graduate of the University of South Carolina, has been studying the causes of the "brown tide" catastrophe that decimated the bay scallop industry in Long Island. By doing research on the conditions that favor the attachment of juvenile scallops to sea grass blades, the student hopes to formulate artificial seeding of new scallops in order to reduce predation by crabs. His research may lead to the recovery of this fishery and point to solutions of Florida's approaching troubles. Request: \$1,500.

Contrast that need with a request from a Hawaiian-born Japanese girl now a graduate student at the University of Hawaii. Twenty years ago well-meaning entomologists introduced Florida's carnivorous *Euglandina rosea* snail to the Pacific Islands in the hopes it would attack and destroy the plant-eating Giant African Snail, *Achatina*. To everyone's horror, the Florida snail has ignored the African invader and has been decimating the Hawaiian populations of beautiful *Achatinella* Agate Tree Snails. A program of rearing these disappearing tree snails is underway, and this student proposes to study the enriched food supply and fecundity of the lab-reared snails. Request: \$1,350.

And so the urgent requests come — \$1,500 to preserve and study the late Dr. Gunnar Thorson's classic 30-year collection of gastropod egg capsules and over a thousand exquisite ink drawings of egg masses of 410 species — a plea from Cookville, Tennessee for \$1,500 to complete a survey of the freshwater mollusks of the tributaries of the Upper Tennessee River before pollution finishes everything off — and a request from a Florida student to study the mariculture of the Pink Conch, *Strombus gigas*, which serves as a seafood in the West Indies.

Funding of these relatively small research projects may seem like bailing out San Carlos Bay with a scallop shell; none the less the support that shell enthusiasts have been giving over the years is meaningful and encouraging. Our museum will in due course join these supporters, but our main contribution will be through our exhibits, field trips and educational programs to inspire more naturalists to appreciate the gifts from the seas of Sanibel and Captiva. An increase in the interest in shell life will have a wonderful ripple effect.



A *Xenophora gigantea* Schepman, 1909 with a coin glued to itself. Unfortunately the coin is so eroded that it is impossible to recognize it.



A *Xenophora pallidula* (Reeve, 1842) which has three(!) *Volutocorbis semirugata* Rehder & Weaver, 1974 attached — all in a very good condition.

NEW CONSTITUTION ALTERS ELECTION PROCESS

For the first time in its history, the 1992 COA Nominating Committee is announcing its slate of new officers months ahead of election time. In the past, here's how the process worked: The Nominating Committee was selected by the President, as required by the old Constitution, "not less than 20 days prior to the annual meeting." This committee selected new officer candidates, obtained their consent to serve, and then presented them to the membership as a slate to be voted upon during the business meeting at the annual convention. Also eligible for election were nominees from the floor who had indicated their willingness to serve and who had a petition signed by at least five members in attendance.

But there has been a growing recognition that such short term attention to the selection of our officers really wasn't in our best interests. Reflecting this concern, nominating committees have been selected earlier in the past few years, a trend that culminated in the selection at the 1991 Convention of the 1992 Nominating Committee by newly elected president Glen Deuel. This allowed the Nominating Committee a full year for their candidate search; such an extended time span is much more realistic in a "long-distance" organization like COA.

The newly approved Constitution and By-Laws formalize this trend. Now, the only stipulation in the Constitution is that the President appoint the Nominating Committee (as well as the Annual Audit Committee) with the approval of the Executive Committee. The regulation of the election process has been moved to the By-Laws, Chapters 2 and 3. These new By-Laws stipulate that a new 3-member Nominating Committee be appointed immediately after the annual meeting. This slate is submitted to the Board of Directors and made available to the Membership thirty days before the annual meeting.

One other change in the process is the stipulation that nominees for Vice-President and President must have served or currently be serving on the Board of Directors. This change is intended to ensure that our leaders have at least some working knowledge of the organization, of its history and purposes and regulations.

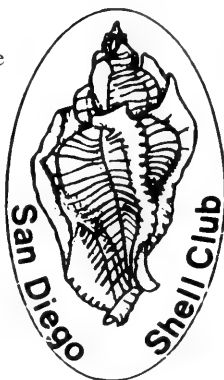
Friends of the Everglades

Twenty-two years ago, Marjorie Stoneman Douglas formed "Friends of the Everglades," an organization devoted to saving this great wetland from becoming another casualty of man's unchecked and ill-advised development. (If her name sounds familiar to you, it may be because she is the author of the 1947 classic documentary book, **The Everglades: River of Grass**.)

Today, Ms. Douglas, now 101, is still active in the watchdog fight to protect this river of grass. If you would like to join her in a small way, membership is just \$1 a year. Write "Friends of the Everglades," 3744 Steward Avenue, Coconut Grove, FL 33133 or call 305-888-1230.

PIN MONEY

San Diego Shell Club pins are available for purchase. The oval pins feature an orange *Murex festivus*, the club emblem, outlined in gold on a red background. The outer edge and the lettering are also in gold. The pins, designed in time for the 1989 COA meeting there, cost \$3.50 postage paid. They are available from Margaret Mulliner, 5283 Vickie Drive, San Diego, CA 92109.



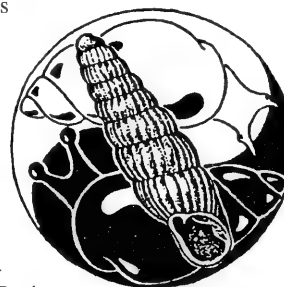
NEW CONSTITUTION AND BY-LAWS APPROVED BY MEMBERSHIP

Effective June 1, 1992, Conchologists of America will have a new revision of its Constitution and By-Laws. The draft of the document was submitted to the membership for a vote, enclosed in the March issue of **American Conchologist**. The deadline for receipt of ballots was May 15. The overwhelming majority of these responses were affirmative, and so the organization is now governed by this document.

The Constitution and By-Laws were completely rewritten and reorganized. Many topics which related to the day-to-day running of the organization were removed from the Constitution to the more-easily amended By-Laws. A number of changes were instituted in these documents, some of them to more realistically reflect the current direction and actual conduct of the organization, and others to alter the organization itself so that it runs more smoothly and so that the governing body is more representative of the growing organization.

The document is also shorter and more readable, so we urge you to take advantage of this fact and do read it through. It is beneficial both to the organization as a whole and to the membership as individuals for each of us to know how COA works. And take care of that copy of the Constitution and By-Laws you received. It is now the official document for your files.

Ruthenica, a new and prestigious Russian scientific journal, will be devoted solely to malacology. Appropriately christened **Ruthenica**, the Russian Malacological Journal is named after a genus of land mollusks endemic to west Asia in an area known in medieval times as Ruthenia. The journal's logo is *Ruthenica filigrana* Rossmassler.



Headed up by such prominent Russian malacologists as Dmitri L. Ivanov, Boris Sirenko, Yuri I. Kantor and Alexander N. Golikov, volume 1 carries five important papers on marine and land mollusks. The quality of the science is high, and this new publication will be welcomed universally by all malacologists. Papers are either in English or Russian, with lengthy abstracts in alternate languages.

Among the fully illustrated research papers are Kantor's brilliant "On the morphology and relationships of some oliviform gastropods" (36 pp.) and Schileyko's extensive "Problems of the phylogeny of higher Pulmonata" (14 pp.). New taxa are proposed.

Launched during financially hazardous times, the subscription price is only U.S. \$15 (plus \$2.00 for mailing). The new journal is being assisted by **The Nautilus** in Maryland and by the Bailey-Matthews Shell Museum (c/o Dr. R. Tucker Abbott, P.O. Box 2255, Melbourne, FL 32902.2255), both of which can arrange new subscriptions.

Send a check or money order made out to "R. Tucker Abbott" and Volume 1 will be mailed from Melbourne, Florida. Volume 2 is expected later in the year. Institutional subscriptions are \$20.00, plus \$2.00 postage. Ordering directly from Russia may be difficult, if not impossible, at the present time.

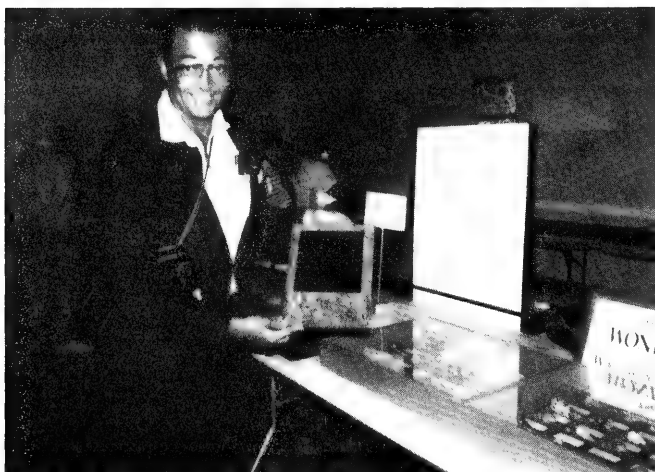
New Museum Appeals for Literature

A new museum is being formed on the island of Madeira, the Museu Municipal do Funchal. Antonio Domingos Abreu, the organizer of the malacological section, and Curator of Malacology tells us one of the greatest needs is shell books and publications. If you can help the new Museu do Funchal, write to them at Rua da Mouraria, 31, 9000 Funchal, Madeira.

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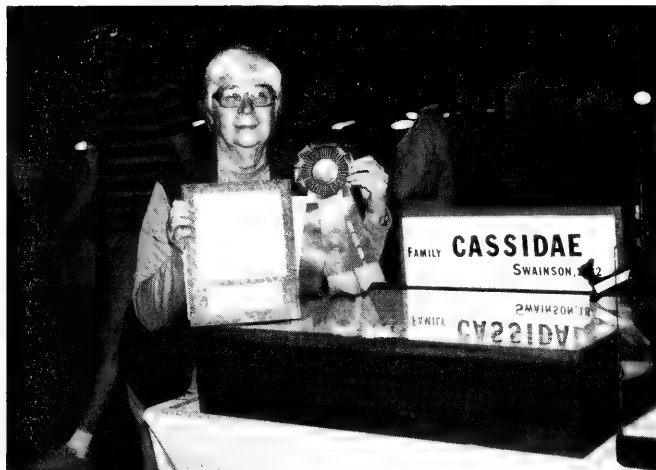
Sue Vaughan at the 1992 St. Petersburg Shell Show with her COA Trophy winning exhibit, "Shells and Nature."



William Reid, M.D. wins the COA Trophy at the Marco Island Shell Show in March for his exhibit, "The Wonders of Worldwide Shells."



Wayne and Donna Harland show off Wayne's COA Trophy in front of his winning exhibit of Caribbean Cones at the 1992 Broward Shell Show in February.



Elaine Phillips with a blue ribbon and her COA Trophy at the 1992 Sarasota Shell Show in early February. Elaine's trophy-winning exhibit was entitled "Family Cassidae."



Ethel Gettleman looks very pleased about her COA Trophy and a St. Louis club trophy she won at the St. Louis Shell Show (look for the St. Louis Arch). Her exhibit contained self-collected shells from both the Caribbean and the Pacific waters off Costa Rica.

NEW SHELL DEALER

There's a new shell dealer among our ranks: June Huie and her son Cade have bought "Sea Gems" of Wichita Falls, Texas, formerly under the proprietorship of Maurice Chapel, who is in failing health. June is a longtime COA member and past member of the Executive Committee, and an experienced collector, as well as newsletter co-editor and past president of the North Texas Conchological Society. She and Cade have christened the new venture "Shell World, Inc." We extend a welcome to them and wish them luck.

EXCHANGE DEPARTMENT:

Riccardo Giannuzzi Savelli, C.P. 22 (Succ. 26), 90146 Palermo, Italy, has begun collecting shell club pins and T-shirts (size XXL). He writes that he would like to exchange "a batch of interesting Mediterranean sea shells" for your club's pin and/or T-shirt.

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by Pinky Pinkerton

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NO, NO, the worst sound is a two-year old on the loose in the shell room.

NO, NO, NO, the worst sound is a lip breaking after a non-sheller drops it after saying, "Wow! I can hear the ocean!"

NO! NO! NO! NO! the worst sound in the world is hearing your local California news announcer say, "Wow! I bet that was at least an 8 on the Richter Scale!"

*1324 Westmoreland Drive, Warrenton, VA 22186. Pinky is a member of the National Capitol Shell Club.

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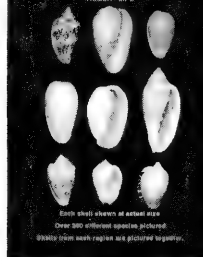
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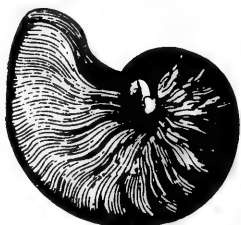
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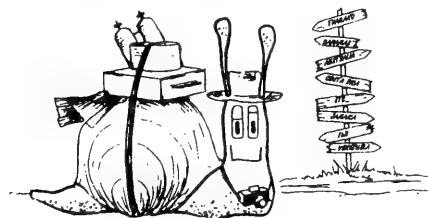
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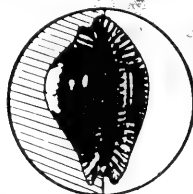
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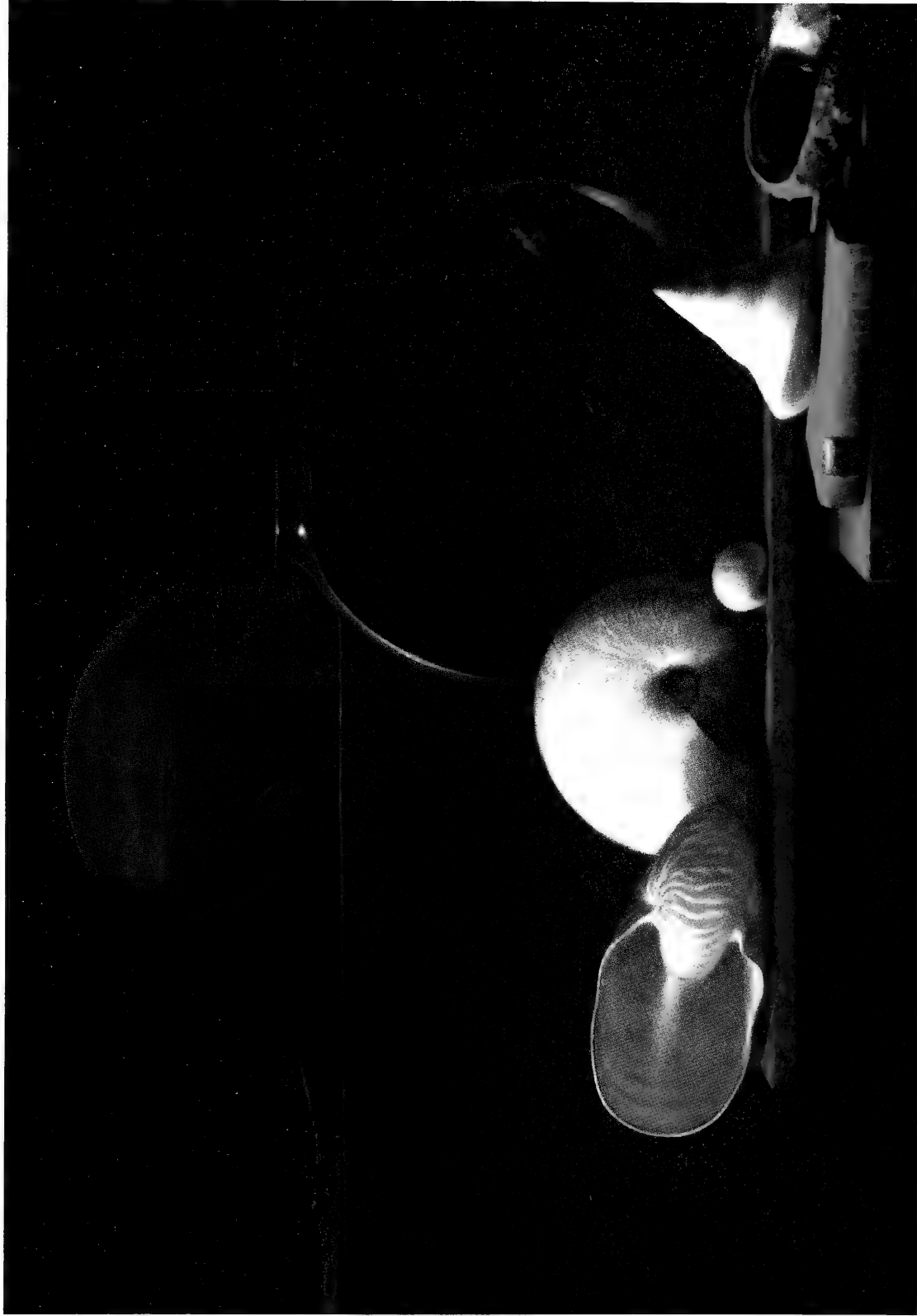
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Ship of Pearl
by William Swetcharnik

AMERICAN CONCHOLOGIST

QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 20, NO. 3

SEPTEMBER 1992



In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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MEMBERSHIP

Memberships are for the calendar year, January through December. Late memberships shall be retroactive to January. **DUES:** (per year) INDIVIDUAL (USA, Canada, Mexico) \$12.50; FAMILY & CLUB/ORGANIZATION (USA, Canada, Mexico) \$15.00; CARIBBEAN, SOUTH & CENTRAL AMERICA (via Airmail) \$20.00; COUNTRIES OUTSIDE THE AMERICAS (via Airmail) \$25.00. Make checks payable to CONCHOLOGISTS OF AMERICA. Please pay in U.S. dollars or with a check that has Transit Enrouting and Account Numbers printed at the bottom of the check, or with a money order; send to Bobbie Houchin. **RENEWALS** are sent to the TREASURER, Walter Sage. **BACK ISSUES** are available from Mrs. Houchin as follows: prior to 1985 - \$1.50 each; 1985 to current - \$3.00 each.

COVER: The cover paintings, back and front, are the work of William Swetcharnik. They belong to a series of "shell and stone" paintings in which he uses seashells to explore the theme of transient beauty. On the front cover is *Ship of Pearl*, painted in 1984 in oil on wood panel measuring 19 1/2 x 28 inches. On the back cover, his 1984 *With Pearl Ear Drops* is 12 inches square, in oil on wood panel. Designed to function as an architectural ensemble, the paintings from the series will be shown this fall at the Peninsula Fine Arts Center in Newport News, Virginia, and at the Washington County Museum of Fine Arts in Hagerstown, Maryland, next spring.

A Fulbright Fellow with numerous distinctions and exhibitions to his credit, Swetcharnik is the subject of many articles and is listed in Who's Who in Art and Who's Who in America. For further information, contact him at 7044 Woodville Road, Mount Airy, Maryland 21771. Telephone (301) 831-7286.

PRESIDENT'S MESSAGE

Congratulations to the Jacksonville Shell Club for a wonderful convention! It was a fitting celebration for our 20th anniversary.

Looking back, I find it amazing how quickly a handful of shell collectors has grown to an organization that spans the country and includes many members around the world.

The success of COA is due mainly to the contributions of time, talent and resources of our members — and very significantly, the dedication of the people who have served and are serving on the management board. Without their unselfish loyalty and service, we could not have advanced this far.

A very special thank you to my "home" club, the Astronaut Trail Shell Club, for the lovely red roses presented to me at the convention banquet. The support and encouragement of ATSC members has made and will make my duties to COA pleasurable and fulfilling.

DORIS

...AND NOW ON TO COA 93!

It seems like the COA Convention gets better every year, and COA 93 will continue that tradition with an emphasis on shelling, shelling, and more shelling. Mark your calendars for 11-17 July, 1993 and your maps for Panama City Beach, Florida, to join your Gulf Coast Shell Club sponsors for an exploration of the shelling sites of the Florida Panhandle. The convention facility is the Edgewater Beach Resort where we will stay in condominium units that accommodate 1-8 persons. Your best (and least expensive) choice is to form a group and rent a unit - and save that money for the Bourse. Want to learn more? A ten minute slide show on the convention is available (just right for that shoebox presentation at your next meeting). Contact Linda and Jim Brunner at P.O. Box 8188, Southport, FL 32409 or call (904) 265-5557.

1993 NOMINATING COMMITTEE

According to the newly revised COA Constitution and By-laws, the Nominating Committee is to be appointed a year in advance. The 1993 Nominating Committee has been appointed and was announced at the 1992 COA Business Meeting. The committee consists of:

Chairman **Marion Deuel** — 8011 Camille Drive, Huntsville, AL 35802

Horatio Buck — 4357 Hardwood Circle, Lilburn, GA 30247

Travis Payne — 2703 Wayne Circle, Decatur, AL 35603

If you have suggestions for the Nominating Committee, please notify one of these people.

OOPS:

Linda and Kevan Sunderland's June 1992 centerfold, Caribbean Volutidae, has several errors: On page 14, upper left, the first species should read "*Scaphella aguayoi*." On page 15, second row, first and second photos from left, please replace the captions with corrected versions: the first caption from left should read, "*Lyria beauui archeri* (Angas, 1865). 42mm. 70' in sand, NW Guadaloupe." The second caption from left should read, "*Lyria beauui* (Fischer & Bernardi, 1857). 58mm. 120-130' off St. Barts, French Antilles."

**Use the handy gold form
to renew your COA membership.
Don't miss the information on the back
about the COA Index, T-shirts and more!**

NEW SPECIES OF MURICIDAE SINCE 1971

by Emily H. Vokes

In 1971 I published a catalogue (*Bulls. Amer. Paleontology*, v. 61, no. 268) of all of the species names that had been proposed in the genus *Murex*, plus those members of the subfamily Muricinae, (the only-later-named) Muricopsinae, and Ocenebrinae, which had been named in other genera (such as *Chicoreus*, *Murexsul*, *Ocenebra*, etc.). Essentially it was a catalog of the genus *Murex* of Lamarck and contemporaries, when life was simpler and everything was called "*Murex*."

Since that publication I have maintained my card catalog, entering each new species as it is described, in the belief that maybe someday I would do a second edition. Whether that will ever happen remains problematical, but I thought that some of the information might be of interest at this time.

If you have had the feeling that there seem to have been an awful lot of new species described in the muricids in the last 20 years, you are not mistaken — and, as it turns out, I am the guiltiest of the perpetrators!

Since 1971 four authors have "dominated" the field of muricid taxonomy and, in terms of numbers of species names (I am not making any value judgement as to the validity of the name, only that it is a valid taxon), the breakdown of new species named in these same subfamilial groups is as follows:

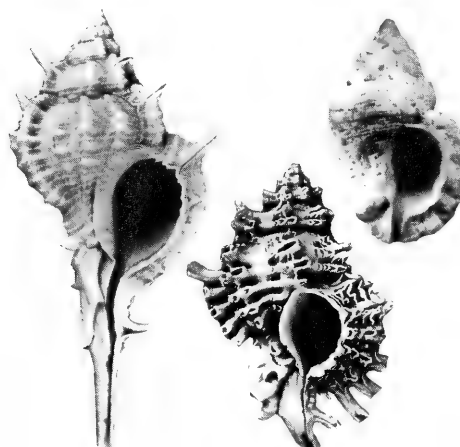
AUTHOR	NUMBER
Vokes (<i>et al.</i>)	84 (Recent - 34; fossil - 50)
Houart (<i>et al.</i>)	67 (all Recent)
D'Attilio (<i>et al.</i>)	44 (all Recent)
Vokes and Houart	2 (Recent)
Vokes and D'Attilio	3 (Recent - 1; fossil - 2)
Petuch	35 (Recent - 25; fossil - 10)
All others	109 (Recent - 65; fossil - 44)
Total	344 (Recent - 238; fossil - 106)

I have also maintained a list of what I consider to be **valid** species of Muricidae. This is a totally subjective list but, counting up those names proposed before 1971, I came up with a total of approximately 335 valid Recent species in these three subfamilies.

Department of Geology, Tulane University, New Orleans, LA 70118

If one takes a critical look at the new names proposed since 1971, one probably finds 200 valid Recent species. Thus, of the approximately 535 valid species in the three subfamilies, almost 40% have been described in the last 21 years, in contrast to 60% in the 213 years between 1758 and 1971 — so your impression about a lot of species is not mistaken!

Why should this be so? It is due in large measure to deeper dredging, in particular, the tangle nets in the Philippine Islands, which have contributed a disproportionate number of new species. It also coincides with the increase in SCUBA collecting. But most of all it is a result of a few persons (those mentioned above) who have been actively studying the group. Any other family with active researchers would probably show the same increase.



Murex described since 1971 by the chief "perpetrators."

From left: *Chicoreus (Siratus) carolynae* Vokes, 1990. USNM 860504 (holotype); height 52.8mm. Ilha de Itaparica, Bahia, Brazil. *Murexiella pelepili* (D'Attilio & Bertsch, 1980). Height 26.2mm. Japan. *Dermomurex (Triatalatta) leali* Houart, 1991. MORG 26.457 (holotype); height 9.5mm. Victoria Bank, Espirito Santo, Brazil.

A COA QUIZ

- Can you name the COA members in the photo at right?
- Name the founder of COA. (Hint: It wasn't Hank Foglino)
- What is the species of the COA logo shell?
- Which of the following has been a COA President?
 - Walter Sage
 - Donald Dan
 - Richard Kurz
 - Richard Goldberg
 - Kirk Anders
- What do the following people have in common besides the fact that they are all COA members: Dottie Janowsky, Kathe Daniels, Jay Tripp, Peggy Williams, Vivienne Smith, Dave Green?
- What was the site of the only COA convention ever held outside the continental U.S.?
 - Vancouver, British Columbia
 - Cancun, Mexico
 - Freeport, Bahamas
 - Bridgetown, Barbados
 - San Jose, Costa Rica
- Who was the first editor of the **COA Bulletin**?
 - Charlie Glass
 - John Paduano
 - Tom Rice
 - Frank Nelson
 - Wayne Stevens
 - Gary Rosenberg



- Which of the names in #7 was never an editor of the **COA Bulletin**?
- Which of the following states have never hosted a COA convention?
 - Ohio
 - Texas
 - Oregon
 - Missouri
 - Virginia

To find out how to get the answers to this quiz, check the margins in the ad pages.

WHAT IS IT???

With this feature, we are inaugurating what we hope will become a regular column. It's not a contest, and we don't know the answers. Its success depends on YOU.

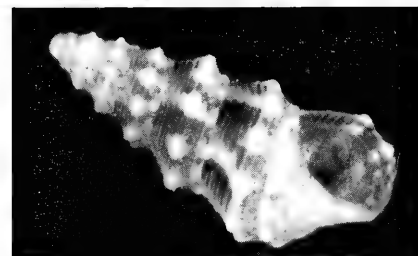
Do you have a shell in your collection whose identity has eluded you? Send us a good, clear photo of it, and we will publish it. Don't forget to include all pertinent data you have: size, color, collecting locality and habitat if you know it... anything which might help one of our readers to identify it.

Do you recognize a shell from this column? If so, write to the editor with your information. We'll publish the answers we get in the next issue of *American Conchologist*.



This handful of little *Engina* species were taken off Barbados in 80 fathoms. They range from 9 to 12 mm in length. The photo was sent to us by Kevan and Linda Sunderland of Sunrise, Florida. Do you know what they are? Write to us!

The following two photos were sent to us by Colin Redfern of Boca Raton, Florida. Mr. Redfern writes:



"This mystery cerithioidean has apparently been a problem for some time, as it was illustrated by Vokes & Vokes (1983, Pl.50, fig.8) as '?*Cerithium* species' in their treatment of the shallow-water fauna of the Yucatan Peninsula. My specimens are from Abaco, Bahamas, where empty shells occur uncommonly in beach drift and in sediment down to a depth of 170'. The photos are of a 2.5mm live-collected specimen that crawled out of a bag of shell-sand and fine coral rubble brought up from 73' off Chub Rocks, Abaco.

"The shell is semi-translucent yellowish brown with opaque white nodules. The spiral threads are predominantly dark brown, and the spiral sculpture below the periphery of the body whorl and on the base is dotted with this color. The operculum is translucent and paucispiral. There is some green algal discoloration on the shell."

THE COWRY N.S.

It looks like Jiri Zidek's proposed cowry magazine will become a reality. The following announcement came to us recently:

The proposal to revive **The Cowry** magazine has been favorably received, and it thus appears justified to start planning its reappearance. **The Cowry N.S.** (New Series) will commence in 1993 but, because of concerns over a sufficient number of suitable contributions, it will be published in irregular intervals and issues will not be bracketed into volumes. For logistical reasons, subscriptions will be payable on a four-issue basis; however, they will not necessarily amount to annual subscriptions. The publication will be in the 21 X 28 cm format. A trade/buy/sell section will be available in the form of line advertisements (no display advertisements permitted) at U.S. \$2.50 per line (ca. 16 words) for the first run, and one-half that for reruns. Announcements will be printed free of charge, but will be subject to suitability evaluation and space restrictions. The cost of subscription has been set at U.S. \$28 for

individuals and U.S. \$56 for libraries, which is not much considering that this will be a highly specialized periodical (= small press run = high unit cost) that will accept color illustrations.

To reiterate some of the initial survey/announcement, **The Cowry N.S.** is envisioned as an international journal dealing with all aspects of the taxonomy, biology and phylogeny of the Cypraeaacea (with the most closely related superfamily, the Velutinacea, not necessarily excluded). It will be a refereed publication with a board of contributing editors/reviewers, which is a must for dealing with taxonomic issues.

Potential contributors are asked to communicate intended topics and approximate dates of their availability, and to request a copy of the editorial policy.

Address correspondence to J. Zidek, P.O. Box 95, Socorro, NM 87801, U.S.A.

NEW PROPERTIES DIRECTOR:

Hank Foglino, 4 Trent Court, Smithtown, NY 11787 is COA's new Properties Director. If you want to order a COA pin, a COA t-shirt, an Index, a COA History or back issues, Hank is the person to contact.

Congratulations

to Meg and Richard Goldberg on their marriage,
September 5.

And welcome, Meg, to the ranks of COA.
We hope you'll learn to love shells at least as much as
Rich loves to dance!

OBSERVATION OF FEEDING HABITS IN *Conus granulatus* LINNE, 1758

by Wayne Harland

photos by Donna Harland

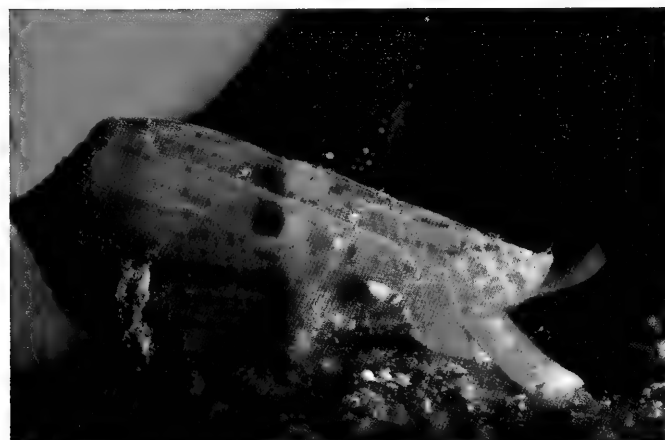
In October of 1991, while my wife Donna and I were diving off Pompano Beach in southeast Florida, we were rewarded with two outstanding surprises. First, Donna found a large specimen of the highly prized and elusive Glory of the Atlantic Cone, *Conus granulatus* Linne, 1758; and second, as she removed the shell from the rubble, she found that the cone was feeding on a segmented worm of the Class Polychaeta. We have had instances in the past of shells regurgitating their prey, but we have never captured a specimen during the feeding behavior.

When we returned home Donna wanted to take some close-up photographs of the live animal, using a new macro lens we had just purchased. She set up a small "photo aquarium" with some rocks and sponge for background settings, and she placed her shell carefully in the most photogenic spot.

*Wayne and Donna Harland, 2549 SE 15th Street, Pompano Beach, FL 33062



A live specimen of *Conus granulatus* stalking its prey, a segmented worm of the Class Polychaeta. These worms bore into dead portions of coral reef structures and are pursued by many predators. The cone has picked up the "scent" and is preparing to sting the worm with its poisonous radular tooth, a needle-like apparatus which carries a venom to immobilize the worm. It is housed within the proboscis, the large orange-yellow projection upon which the eyes are attached.

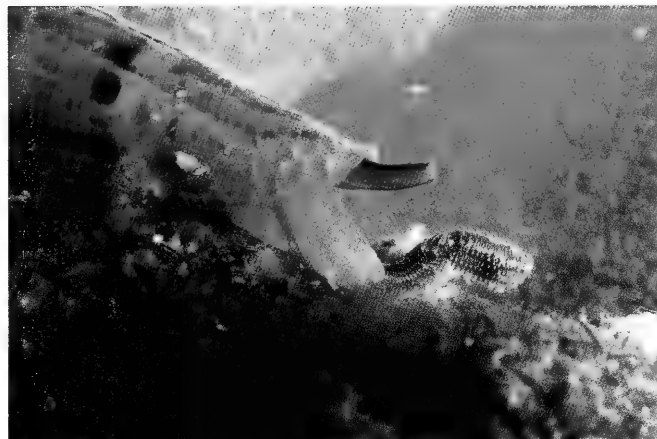


The entire worm has been consumed by the cone, and the proboscis will be retracted into the body cavity of the shell.

But after carefully and deliberately setting up the tripod and the flashes, and after focussing, Donna was ready to lose patience with a very obstinate mollusk who refused to come out! *C. granulatus* is a very shy shell and is rarely, if ever, found exposed during daylight hours. Obviously, some coaxing was required.

On our trip back from the dive site, the shell had released its grip on the worm, so I figured that if that worm had elicited some excitement in the wild, why not try it in a captive environment? The worm had been broken in several spots and apparently its "juices" were flowing, for within seconds after we put it in the aquarium, the cone extended its siphon and began homing in on the scent.

What transpired is shown in the following photo sequence. The amount of elapsed time for the entire process was less than 20 seconds.



The cone has engulfed the head of the worm and is proceeding to swallow the body. Note how the proboscis has expanded, both in length and diameter, as it stretches to consume the prey. The worm is drawn in like a piece of spaghetti.

Photos copyrighted by Donna Harland, 1992



We have rolled the shell onto its side to show how the proboscis is still dilated after its meal.

HOW THEY LIVE WHERE THEY LIVE

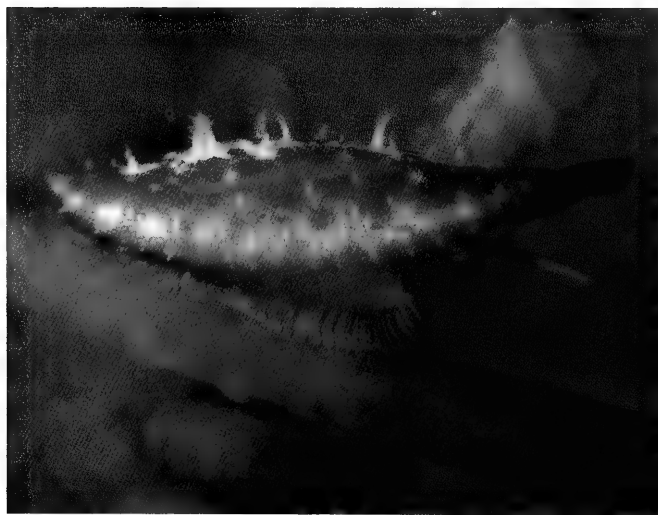
by Peggy Williams

Mollusks come in an incredible variety of shapes, sizes, and colors—and this is mostly by design. Shell characteristics are often adaptations to the environment and the struggle to survive, for mollusks, as all animals, must 1) find food 2) protect themselves from predators 3) survive within the limits and perils of their environment 4) avoid competition for available food and living space. Each habitat supports a different group of mollusks that has evolved to deal especially with the possibilities and limitations of that singular niche. The adaptation of shell and habits to satisfy these needs among mollusks is fascinating.

P.O. Box 595, Tallevast, FL 34270



Lobiger souverbii, a bulbous green animal, lives in bulbous green algae.



Both the shell and the mantle of *Simnia uniplicata* match its host soft coral.

Photos by Peggy Williams

Color Me Cryptic

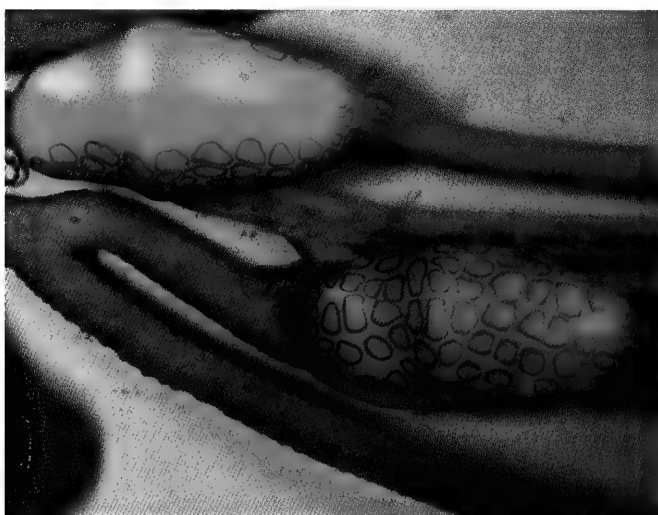
Although little is known about how mollusks are able to lay down brilliant colors in their shells, and there's no logic to the beautiful pinks, greens, blues, purples, and oranges found in the apertures of gastropods and inside of bivalves, there is sometimes a logical explanation for the bright colors and complicated patterns laid down on the surface of shells, and also for the coloring of the animals themselves. Color which actually hides an organism is termed "cryptic."

Among the most colorful shells are the scallops, accounting for their popularity among shell collectors, yet many of them are actually colored for survival! If you look at any of the Bay Scallops (*Argopecten irradians* and its subspecies) and the Calico Scallop (*Argopecten gibbus*), you will see that the two valves are colored differently. The lower valve is white, or at least much lighter than the upper. The Bay Scallops' upper valve is generally a greenish-brown (or occasionally yellow-brown or deep orange), whereas the Calico Scallop is usually purple, orange, or mottled with some of each color. There is a reason for this.

The Bay Scallop lives unattached to any substrate in a seagrass environment. In Florida, we find it in Turtle Grass, which is colored greenish-brown. When you or any other predator, such as a fish, look down at the shell resting on the Turtle Grass, it's very hard to distinguish from the algae. However, this animal is capable of swimming. It claps its two valves together, creating a jet of water which propels it backwards in a series of jerks which can actually take it to the surface of the shallow water. If you were a crab or other bottom-dwelling predator looking up at the swimming animal, you would see the lower white valve against the light of the sun shining through the water, which also appears white. Therefore, each of the valves, though a different hue, is cryptically colored.

The Calico Scallop, in contrast, is not found on green Turtle Grass, but in areas of shelly rubble, which are overlaid with a purplish algae. The bright purple hues of the shell are easily lost against such a background.

Similarly, the purple snails, *Janthina* species, are colored to match their environment. Floating upside down on the surface of the "deep blue sea" their entire lives, they are hard to see from above because their dark purple surface matches the ocean. The other side of their shell, however, is a lighter hue, again making them hard to see from below against light coming through the water.



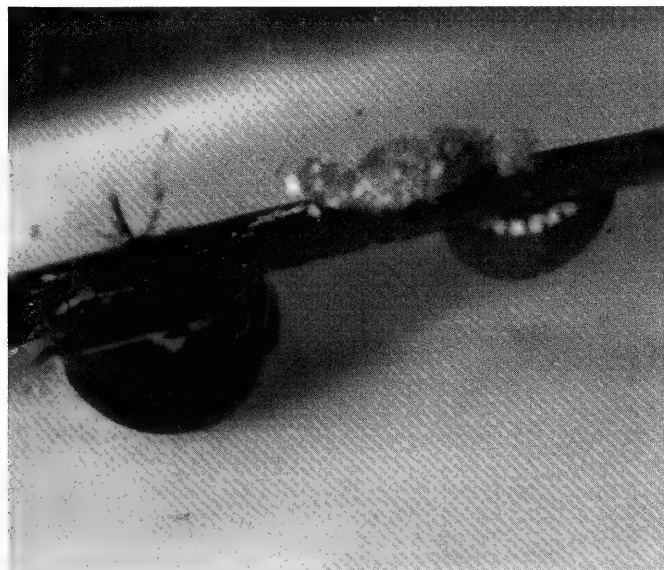
The Flamingo Tongue's bright color may warn of danger.

Cowries and their relatives are often brilliantly colored, and even if the shell were seen against its environment it would be easy to spot. The animal's mantle, however, generally covers the shell in life, and these mantles can be truly cryptic. They have bumps, projections, filaments, and mottled colors that can match the algae or rocks over which they move. A good example is *Simnia uniplicata* which I find with difficulty on the soft coral "sea whips" here in the Gulf of Mexico. When you find the shell of a *Simnia* on the beach, you are enchanted with the lovely maroon and with the exotic, elongated shape of the shell. When you find the shell in its natural environment, you are even more impressed by its unique adaptation. The sea whips are also maroon in color. They look like candelabras, with long, flexible branches having a hard central core. Though they seem a single entity, they are really colonies of coral animals called polyps, each with a pore through which it extends a white corona of tentacles for feeding. Now the *Simnia* shell is colored exactly like the sea whip, and the elongated shell is no wider than the slender branch of its host (and food). But more than this, the mantle is maroon, mottled with white, and with white pustules that extend from the mantle surface exactly as do the coral polyps from their pores. It's a real challenge to find a living *Simnia*! Incidentally, there are also tiny maroon shrimps that inhabit the sea whips and mimic their hosts.

In contrast, the orange shell and mantle of the Flamingo Tongue, *Cyphoma gibbosum*, stands out brilliantly from its purple sea fan host and consequently is one of the two shells most often found by SCUBA divers who don't usually look for shells. (The other is the Flame Scallop, *Lima scabra*.) The bright, contrasting color may serve to warn potential predators that the Flamingo Tongue is unpalatable, or even poisonous, but this fact is so far unestablished.

Caribbean beaches are often littered with tiny green shells which shine on the white sand like emeralds. These are *Smaragdia viridis*, a nerite which lives in shallow water on Turtle Grass. The color, of course, matches the green algae exactly; but there are also tiny white dots on the shell which emulate the white epiphytic organisms found on Turtle Grass. You can go cross-eyed trying to see these shells in their natural habitat!

In the Caribbean there is a beautiful little round shell called the Star Arene, *Arene cruentata*. This shell is pure white, with bright red spots evenly distributed over the shell. It lives on the undersides of rocks, inside the circle of the coral reef, where there are old coral boulders and rubble.



Emerald Nerites' bright color actually hides them on Turtle Grass.

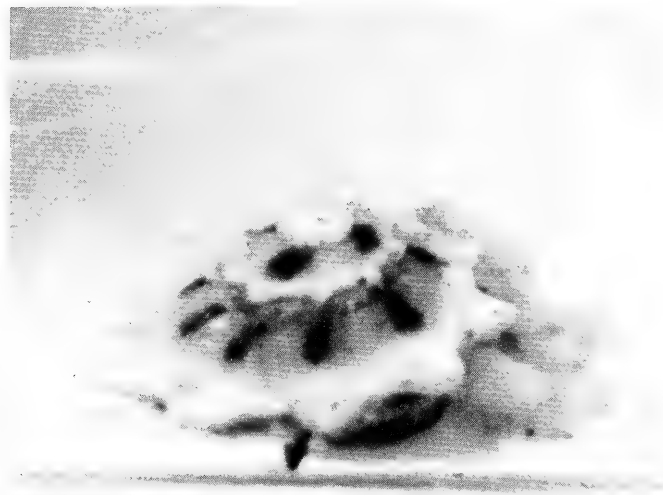
One of the most abundant animals living in this environment is a red foram, a hard-crusting thing that attaches to any surface as a red lump. The Star Arene is usually sitting in a cluster of these red clumps and is extremely hard to see.

Whenever possible, I search for the Bivalved Gastropod, *Berthelina caribbea*. I have never found it. It is a green creature, a slug with an afterthought of a shell perched on its back; it is said to live in *Caulerpa* algae. I have learned what *Caulerpa* looks like and frequently collect it in a baggie to shake and search at leisure. During these searches, I have found two of *Berthelina*'s relatives, *Oxynoe antillarum* and *Lobiger souverbii*. These are also green slugs, but they have internal shells which are not readily apparent until the animal dies.

Even in the intertidal environment, exposed at low tide for all to see, can be found some brightly colored shells which are actually cryptically colored. These are *Puperita pupa* and *Neritina virginea* in the Caribbean, and *Nerita communis* in the Pacific. *Puperita pupa*, called the Zig Zag Nerite, is yellowish white with black stripes and a bright yellow aperture. It lives in tidal pools in the ancient coral shore of many keys and Caribbean islands. Because the rock is yellowish, and the ripples in the shallow water create tiny shadows, the abundant shells are hard to see. Neritinas live in a similar environment, and also among mangrove roots. They are beautifully colored: black, maroon, yellow, gray, and even purple, and patterned with spots, circles and stripes. Each is different and it is difficult to stop picking them up, since each seems more beautiful than the last. They blend so well with their environment that, until your eye is trained for them, you will miss even their bright colors.

One of the prettiest shells in color and spines is the Thorny Oyster, *Spondylus americanus*. In most of its range this shell lives in deeper water, generally 80' and more. Though it may be colored red, orange, purple, or bright yellow, at that depth it always looks blue. This is so because the medium of the water filters out the colors of the spectrum of light falling through it, beginning with the warm colors, until all that can be seen with the naked eye is blue. There are many deep-water organisms — sponges, fishes, crabs and mollusks, that are colored red, but these bright colors cannot be seen without an underwater light.

Perhaps there are reasons for all the brilliant colors we find in shells, or perhaps not. At any rate, some definitely have evolved with colors that protect the animal in its chosen habitat.



The Star Arene is easy to see away from its own environment.

UNCLE WINSTON'S BIG BOOK OF THINGS TO DO WHEN YOU CAN'T GET YOUR FEET WET Or SHELLING MERIT BADGES MADE EASY

by Winston A. Barney

Long ago I learned to live with the fact that I live nearly 300 miles from the nearest salt water. Since I have nothing to trade, I buy shells. I go through the annual vacation battle: the mountains or the seashore. I smell the salt in my nostrils and fondle my snorkel every time I get near my collection or my library.

Yet, over the period of 15 years since I began collecting, I have found ways to ease the pain between visits to the sea. Perhaps I am presumptuous to believe that the reader has not done many of these substitute activities himself. Still, I undertake to present this list for all the

landlubbers, from beginning collectors to experienced conchologists, who yearn for the pleasures of shell collecting but can't get down to the ocean.

What a wonderful dream to be able to walk the sand or the reef each morning, or to stuff the SCUBA gear in the trunk and drive 30 minutes to that favorite spot. Instead, we must cherish the memories of our moments at the sea and go about our hobby in different ways. One does not have to be "rich" to be a shell collector because shell collecting is such a richly rewarding hobby.

Here is a list of 40 activities you may wish to attempt.

1. Group all the shells in your collection by zoogeographical province. Determine if you have any cognate species. Study the provinces and assign general or specific conchological characteristics (if you discover any) to each area.
2. Group all the shells in your collection by author. Determine if certain authors were/are inclined to work with a particular family or geographical province. Write a paper on your conclusions. (*Submit it to American Conchologist* —Ed.)
3. Write identification keys for all the species in your favorite genus. Include sketches and a glossary. Publish your work.
4. Write a reference catalog of your favorite genus, listing citations of each species from every book and periodical in your library.
5. Create a card file or computer data base of your entire collection. Minimum information should include: genus, species, author & date, catalog number, source, collection data, value, and at least two major references in your library.
6. Research the origin of each species name in your favorite genus. You may have to go to original descriptions for this information in some cases. Periodicals are the best sources for recently named species. There are several books published, such as Edmund Jaeger's **Source Book of Biological Names and Terms**, that are good for deciphering Linnean names. Publish your findings.
7. Photograph all the species in your favorite genus in black and white. Crop and enlarge the photos and create an album. For extra fun, run the photos through a full page scanner and produce computer image files for each species. Create a menu-driven program to call up each file. (Lots of bytes needed!)
8. Photograph your shells for color slides, and then create a slide show, adding narration and music.
9. Create a video tape recording of your favorite shells with narration and music. Consider whether to concentrate on one genus, one family, one geographical province, or the results of a particularly memorable shelling trip.
10. Locate the nearest college/university library that houses malacological periodicals and reference books. Make your own list of their holdings for your future reference. Spend several days familiarizing yourself with the books you haven't seen before. Unless you studied zoology in college, there are many journals and periodical bulletins you probably have never seen. Although most of these references are very technical, you may spend many pleasant hours going through them.
11. Research the anatomy of your favorite family as an exercise. Make drawings and create a vocabulary card file. Write a paper on your findings.
12. Research the opercula of gastropods. Compare and contrast the various families. Prepare an identification key. Make sketches and/or photographs.
13. Collect and organize maps of the world's coastlines and islands. Assign identifying numbers or codes to each unique area and enter these codes into the data section of each shell in your collection.
14. Write an article or book on geography and shells. Establish a universal code for all unique shelling areas. The code could then be matched to numbered maps to provide easy look-up for shell data. Begin by going through your shell dealer's monthly lists and organizing the commonly named collection areas. If you can't produce a mental picture of each location then you'll see the need for such a book.
15. Write a computer program for the above: enter the code or area name and get a map on the screen. Draw maps, then use a full-page scanner to create computer maps. Map details are not important; just the outline, the relative position to other points, and the named area are needed. Black and white line drawings will save lots of wasted bytes.
16. Collect photos of all the species in your favorite genus. Make a card file or data base that lists the location of all photos in your library. This is particularly useful for locating photos in such books as **The Shell: Gift of the Sea** (Stix, Abbott, Landshoff), **Shells — Jewels from the Sea** (Harasewych, Alcosser), postcards, seashell calendars, and "coffee table" shell books.

*2801 Clary, Fort Worth, TX 76111. Winston Barney really took his own advice to heart - he is the author of the new **Index to the COA Bulletin/American Conchologist**, one of the most valuable reference tools you're likely to own. —Ed.

Please remember to send in your COA dues. They're payable now.

17. Collect biographies of famous malacologists. There are many short articles in the club periodicals. Just go looking for them.
18. Research and write a biography of a famous malacologist or zoologist. There are many living but relatively unknown workers whose stories would make excellent reading. Start by looking at chairmen of university malacology departments, or curators of museum collections worldwide. That should keep you busy for a while.
19. Research the biographies of all the authors of species of your favorite genus. Write to those whom you can contact. You will be pleasantly rewarded, and you may then pass the information along by publishing your findings.
20. Collect shell books and periodicals. Make a list of book sources, including microfiche reproductions of early works, scientific journals, university and museum publications, club newsletters, and current publications. Catalog your reference collection so the reference number can be placed in your shell catalog.
21. Collect and index articles concerning taxonomy. If possible, reproduce the articles and gather them into a single volume such as a binder. Include Splitter/Lumper articles, ICZN rules, current generic placement problems, and other related articles. If kept up-to-date, this will become a well-used reference tool in your library.
22. Research and collect articles concerning keeping live mollusks in marine aquaria.
23. Set up a marine aquarium and stock it with compatible mollusks. Observe and document their habits and longevity. Write an article, with photographs, concerning your observations.
24. Research and collect articles concerning shell art from books and periodicals.
25. Study the above, and then experiment with shell art or arranging, yourself. Consider new forms of art using shells as a medium.
26. Research and collect articles about shells in archaeology. Visit or write to museums to locate more information. Research the use of freshwater or land shells in your area 100 years ago; 200 years ago.
27. Discover the nearest deposits of fossil shells and plan a fossiling trip. Study before you go to know what to look for. Identify and catalog the fossils when you return.
28. Go hunting for land snails in your area. Identify and catalog your catch. You may want to observe them in a terrarium or vivarium for a while before adding them to your collection.
29. Go shelling for freshwater shells in your area. Identify your catch. Report your findings in an article for your club newsletter.
30. Create a pencil or charcoal sketch of your favorite shell. If you think you are not artistic enough, don't despair. Trace the outline from a photo or a shell coloring book. Use an overhead projector to enlarge the image, or use a photocopy enlarger. Once you get the outline, you can fill in the details. Experiment if you wish and create your own species nova. Of course, it bears your name!
31. Create an oil painting of your favorite shell. Who knows, you may have hidden talent.
32. If you have a nice wood shop, create a wood sculpture or carving of your favorite shell. Or if you have a scroll saw, cut out shell outlines and paint them for room decorations. How about a shell-shaped address plaque for the front of your house? Get busy!
33. Design and create a game involving matching species to genus, or genus to family. This could be a card game or a board game. Market your creation.
34. Design and create a set of "flash cards" for helping you learn the genera and families of mollusks. You might also create a set of cards for learning shell vocabulary words such as parts of the shell, various radulae types, shell anatomy, etc.
35. Research the museums that have major shell collections. Write to them for information about their collections and their publications. Don't overlook foreign museums, for they have the original type specimens and descriptions for most shells.
36. Study your own collection. Be able to identify every shell by name and geographical province. Be able to itemize the differences between two forms of one species, or between a species and a subspecies. Be able to point out the difference between a particular genus and the other genera in the same family.
37. Organize and file dealers' catalogs for easy access and reference. These are useful for discovering variants, color forms and size anomalies. They also often contain range extensions and other tidbits of information about certain species.
38. Keep a card file of recently named species gleaned from your reading of periodicals. These species will not appear in I.D. books for some time, so you need a look-up system when they appear on a dealer's list.
39. Make your own list of activities or projects you would like to undertake. Prioritize the list and get started.
40. Write an article for **American Conchologist** or a club newsletter to share your project with others. You can really contribute to your fellow collectors by sharing your ideas with them. Most of us are not professional malacologists. We are not in competition for a job in the field. We are not required to publish. No one will scoff at our articles. We all crave to read about our hobby and our shells. Even an article about the commonest of shells is welcome reading to many. Just do it. You'll get real satisfaction from your efforts, not to mention real appreciation from other amateur conchologists.

It's Dues Renewal TIME! Pay now! Avoid the Rush!

EOCENE MOLLUSKS FROM THE TEPETATE FORMATION, BAJA CALIFORNIA SUR, MEXICO

by Richard L. Squires

During the past five years, my colleague Robert A. Demetron and I have been conducting research on previously unstudied assemblages of shallow-marine Eocene mollusks from Baja Sur, Mexico. Most of our work has been on the Bateque Formation south of San Ignacio Lagoon (Fig. 1). In 1989, I received a COA research grant to help defray field expenses for this work. In the December, 1991, issue of *American Conchologist*, I presented an overview of this work (Squires, 1990a).

We have written several articles on new mollusks and other invertebrates from the Bateque Formation and are presently awaiting the publication of our monograph on the stratigraphy, paleontology, and depositional environments of this formation (Squires and Demetron, in press).

Although we continue to collect the Bateque Formation for additional new taxa, we also have been studying similar Eocene formations in Baja California in order to determine how widespread the faunas were during that time. One of these formations is the Tepetate Formation, which crops out about 155 miles (250 km) south of the Bateque Formation in the vicinity of La Paz (Fig. 1). In 1991, we received a COA research grant that helped defray expenses for work on the Tepetate Formation. Our field work has been of a reconnaissance nature, but we were successful in finding some macrofossils in the upper part of the formation at Arroyo Conejo (Fig. 2). Table 1 is a list of the mollusks that we found there. Two of these species are shown in Figure 3. In addition to the listed mollusks, we also found several species of large benthic foraminifera [*Pseudophragmina clarki* (Cushman, 1920), *P. avena* (Cushman, 1921), *Actinocyclus* aff. *A. aster* Woodring, 1930], a calcareous sponge [*Elasmostoma bajanensis* Squires and Demetron, 1989], a gorgonian [*Parisis* n.sp.], a colonial coral [*Actinacis*? sp.], a crab [*Lophoranina* n.sp.], and an echinoid [*Schizaster* (*Paraster*) aff. *S. (P.) lecontei* (Squires and Demetron, 1991)].

The macrofossils in the upper part of the Tepetate Formation at Arroyo Conejo are widely scattered, unabraded fragments in calcareous sandstones abundantly rich in large benthic foraminifera (especially *Pseudophragmina clarki*). Locally, the rock type is white calcarenite. The depositional environment of the upper Tepetate Formation at Arroyo Conejo was shallow marine.

The strata in the middle part of the Bateque Formation are also shallow marine, but they were coral-reef influenced. Although the two formations show some differences in rock type, all of the identifiable species of mollusks listed in Table 1, as well as all the other Tepetate Formation fossils species listed above, are present in the middle part of the Bateque Formation. The co-occurrence of all these species proves that the upper part of the Tepetate Formation and the Bateque are time equivalents and correspond to the middle lower Eocene "Capay Stage" (about 53 million years ago) (Squires and Demetron, 1991).

The time of deposition of the upper part of the Tepetate Formation and the middle part of the Bateque Formation coincided with the early Eocene, which was the interval of peak warming during the last 65 million years. The Atlantic Ocean was narrower during the early Eocene, and there was a strong equatorial current that extended from the Tethys Ocean (an area now represented by the Middle East and India) westward toward the New World. Central America was submerged, and this equatorial current flowed unimpeded toward the western part of North America. The upper Tepetate Formation fossils, like those in the middle part of the Bateque Formation, indicate a warm-water biota closely related to what lived in the ancient tropical Tethyan Ocean and in the Tethyan-influenced waters now represented by the Paris Basin (France), Cuba, and Jamaica (Squires, 1990b; 1992).

*Dr. Squires is Professor of Paleontology, Department of Geological Sciences, California State University, Northridge, CA 91330.

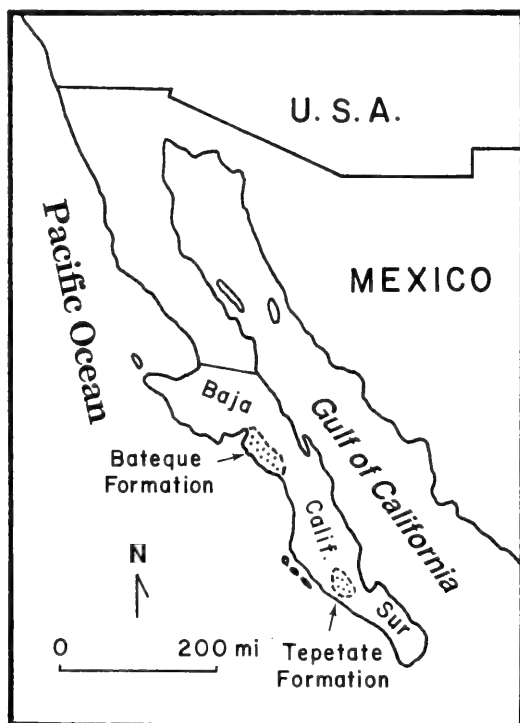


Fig. 1. Location map of the Tepetate and Bateque Formations, Baja California Sur, Mexico.

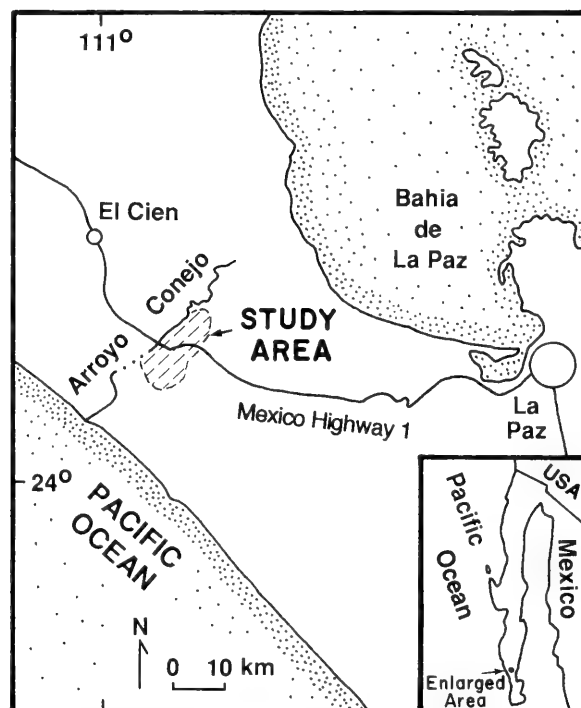


Fig. 2. Location map of the Tepetate Formation at Arroyo Conejo, Baja California Sur, Mexico.

Table 1. Mollusks of the Upper Part of the Tepetate Formation at Arroyo Conejo.

GASTROPODA

Velates perversus (Gmelin, 1791)
Velates batequensis Squires and Demetron, 1990
Bittium? sp.
Campanile sp.
Paraseraphs erraticus (Cooper, 1894)

BIVALVIA

Nayadina (Exputens) batequensis Squires, 1990
Spondylus batequensis Squires and Demetron, 1990
Lima n.sp.
?Pycnodontes (Phygraea) pacifica Squires and Demetron, 1990
Fimbria pacifica Squires, 1990
Venericardia? sp.

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 ———. 1990b. The early Eocene: arrival of Old World Tethyan (Tropical) gastropods into California: *Bulletin of the Southern California Society of Paleontology* 22(7-8):78-81.
 ———. 1992. New occurrences of the malleid bivalve *Nayadina (Exputens)* from the Eocene of Jamaica, Mexico, and Washington. *The Veliger* 35(2):133-136.

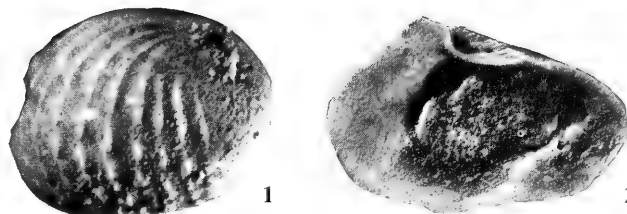


Fig. 3. Examples of mollusks from the Tepetate Formation at Arroyo Conejo, Baja California Sur, Mexico. 3.1, the neritid gastropod *Velates batequensis* Squires & Demetron, 1990, hypotype, LACMIP 11668, abapertural view, height 5 mm. width 5.5 mm. 3.2, the malleid bivalve *Nayadina (Exputens) batequensis* Squires, 1990, hypotype, LAC MIP11669, interior view of left valve, length 19.6mm., height 13mm.

- Squires, R.L., and R.A. Demetron. 1991. Early Eocene macrofaunal comparisons between the Tepetate and Bateque Formations, Baja California Sur, Mexico. *Geological Society of America, Annual Meeting, Abstracts with Programs* 23(5):194.
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INDEX TO AMERICAN CONCHOLOGIST

The new 20th Anniversary Index to *American Conchologist* is a reality. The massive project indexes *COA Bulletins* from their inception in 1973, down through the years to the last *American Conchologist* of 1991. All articles are indexed; every species mention is included; every contributor, every COA Trophy winner, every individual mentioned is in the index.

The Index is a group effort. Winston Barney, a COA member from Texas, did the indexing, with guidance and advice from the COA Publications Board. Walter Sage did a complete check of the index entries, Lynn Scheu did proofreading, the formatting, and the input of corrections, and Richard Goldberg did the cover. We're all very proud of our Special Publication #1, and we hope you will find it as useful as we do.

Don't have your copy yet? Order it right away. The supply is limited, and many were sold in advance and at the July Convention in Jacksonville. At only \$4.00, the COA Index is quite a bargain. See the information sheet on the back of the the renewal form included with this issue of *American Conchologist* for details on how to get yours.

1992 COA GRANT AWARDS ANNOUNCED

COA Grants and Scholarships Director R. Tucker Abbott has announced the recipients of grant awards for the coming year. \$5,000.00 has been awarded, bringing the total of awards for the program since its inception eight years ago to \$24,060.00. COA is very proud of the help we have been able to offer to deserving scholars.

The 1992 recipients and their research are as follows:

- Ami E. Wilbur, College of Marine Studies, University of Delaware — \$500 for Studies in DNA types in the Bay Scallop.
 Katy Metzner, Grice Marine Biological Lab, Charleston, SC — \$500 for her studies in Gene flow in the hard shell clam, *Mercenaria*.
 Dr. Mark E. Gordon, Fisheries Research Unit, Tennessee Technological University — \$1,000, Survey of disappearing mollusks of the Upper Tennessee River.

DEAR EDITORS:

Every time I hear pensive, puzzled shell collectors wonder why shelling in favored areas isn't as good as it once was, I want to yell "Overcollecting!" at them.

Thank you for the "Conservation's the Word" box on page 8 of the June 1992 edition of *American Conchologist*. Please run it in every editon as a reminder to those who are spendthrifts with our ocean treasures.

Fay Washington

625 W. 152 St., #6D
 New York, NY 10031

Thanks, Fay, for your interest, and your stewardship of our oceans — they need all the advocates they can get! As for publishing the June box in each issue: people tend to ignore what becomes familiar; we'd really rather use the space to put old salt water into new bottles, so to speak. If any of you readers has a good idea for a fresh way to phrase a conservation message — a cartoon, a bumper sticker motto, even an essay — send it to us. We'll publish the best of them. Maybe that way we can have a conservation feature in every issue.

Dr. Charles N. D'Asaro, Department of Biology, University of West Florida — \$1,000, Gunnar Thorson's egg capsule project.

Professor Matthew J. James, Department of Geology, Sonoma State University — \$750, Galapagos Pleistocene mollusks.

Ms. Sharon Kobayashi, Zoology Department, Universtiy of Hawaii — \$500, Fecundity studies in Hawaii Tree Snails, *Achatinellidae*.

Dr. Jose H. Leal, Rosenstil School of Marine Sciences — \$750, Taxonomy of Brazilian Volutidae.

These recipients will be requested to submit a short, popular account of their completed research to *American Conchologist* for publication at some future date.

For information about the COA Grants and Scholarships Program, please contact **Dr. R. Tucker Abbott, P.O. Box 2255, Melbourne, FL 32902.**

BACKYARD SHELLING FOR TWO

by Sally Gray Nottage

Margaret Teskey once invited me to come shelling with her in what she called her "backyard." Margaret's backyard was Big Pine Key, Florida. From that time on, which included many shelling adventures over the years, I dreamed of having my own backyard. However, after my friends Geri Andrew and Kirk Anders passed away, I couldn't bring myself to collect or even attend a COA convention (some of you might remember me as your 1979 COA secretary. A chance to move to Hawaii in 1986 brought many changes to my life, including making my long-forgotten dream come true, although I wasn't to realize it for some time.

In October of 1991 (after 39 years of single domain), I married a wonderful man named Jim whose family originally came to the islands as whalers out of New Bedford. Jim had spent most of his life at the best spots for fishing and diving, but he ignored the shells! As I had only briefly mentioned my own interest in shells prior to our marriage, it wasn't until we moved to a house right on Keauhou Bay that I acquired my own "backyard" along with a husband who claimed to have absolutely NO interest in the hobby of shell collecting. So, now that my interest in shells was renewed, how was I to deal with making a convert of my husband?

Returning to the house from snorkeling, I would attempt to gain Jim's interest by showing him what fine "specimens" I had collected. His responses varied from quizzical looks and arched eyebrow to a "that's nice, dear (honey, love, etc.)." He only expressed excitement when "The Cleaning" took place: did I HAVE to clean the shells INSIDE the house? Then he'd exhibit some really wonderful tantrums over the aromas emanating from the kitchen, especially when I'd choose to ignore him and advise him that this was a part of ME and so a part of our marriage! Obviously I was not going to have an easy time of it.

The story changed when a friend of Jim's who did commercial diving stopped by with a very large and beautiful *Conus textile*. Enter the Male Ego. At this point Jim casually suggested that WE should go

snorkeling together in the bay, where I would be able to find helmets and terebras! We went, and boy, did I find shells! He must have thought mistakenly that this would keep me quiet for a while. When that didn't prove to be the case, Jim suggested some other areas of interest. After I made a few jaunts out by myself, and brought home many treasures, Jim stated that he'd thought of a location I might really enjoy, and as this definitely was not an area in which a non-local should make an appearance, he thought that HE should accompany me so that I would be safe. But he begged me not to stay too long. We made several trips of this nature; Jim limited his involvement to standing by the shoreline, staring out at the waves and looking bored.

Shortly thereafter, with a proud, beaming smile, Jim brought a GIFT home to me: heavy-duty plastic storage containers. "Hmmm," I thought, "he's definitely showing signs of taking an interest." "Just wanted the damned smell out of the house," he commented. Oh well.

Apparently, Jim finally got bored with being an observer, and began following my footsteps from tidepool to tidepool during the best minus tides. Curiosity killed the cat. Watching where I was finding cones, cowries, and a multitude of other treats, he began looking for shells himself. At first, I had to reach out and actually pick them up, but finally there came the trip when Jim began actually bringing back HIS finds to me.

While tidepool collecting at the South Airport reef area, October 22, 1991, I knew my battle was won. Out popped the following announcement (which I promptly wrote down on a scrap of paper lest it ever be forgotten): "We've got to go on trips and collect shells in different places." The shelling world had acquired another convert.

2140 Kuhio Avenue #1502, Honolulu, HI 96815. At last word from Sally, our shelling convert, Jim Nottage, was building a trap for collecting harps. Happy collecting, Nottages!



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OUR COA CLUBS — A CLOSER LOOK

by Nancy Gilfillan

INDIANAPOLIS SHELL CLUB

In 1976, eight people were sitting around a kitchen table discussing their interest in seashells; they decided to form a club. Thus the Indianapolis Shell Club was born, and they became its eight charter members.

The Indiana State Museum in downtown Indianapolis provides its basement auditorium for the club's meetings, with access to its audio and visual equipment. The club meets the third Sunday each month except July (the annual club picnic), September (a fossil field trip), and December (the Christmas party).

Fossils have become of interest to a growing number of ISC members, so they make trips to different areas to collect fossil specimens. On the other hand, they also made a field trip to northern Indiana to obtain specimens of freshwater mollusks.

A newsletter called *The Slit Shell* is published monthly by the Indianapolis Shell Club. Its masthead carries the club logo, *Pleurotomaria teramachii* Kuroda, 1955 (Teramachi's Slit Shell). This logo also appears on their club pin.

Membership in the club is currently 30, consisting of those with interests in many shell families, of divers, photographers, and exhibitors. Several newer members are particularly creative in shell crafts: shell-design tee shirts and sweatshirts, oil paintings, water colors, counted cross-stitch samplers, and shell flower arrangements.

The Indianapolis Shell Club has held nine shell shows in various locations in the Indianapolis area, alternating with the now-defunct

Crown Point Shell Club. Their 1991 shell show was held in Merrillville, Indiana, and was a huge success with 67 exhibitors. 1993's show will return to the Glendale Mall in Indianapolis.

The club is very proud, and well it should be, of the unique award trophy made by its own members at a cost of about \$150.00. It is constructed with wood from trees native to Indiana in the shape of a hinged open book. On the right side as it opens is a vinyl background identifying where, when, and for what it is being awarded. On the left side is a three-dimensional replica of their logo shell approximately 3 1/2" in diameter, and so well done you would swear the shell was real! Only 22 of these have been awarded to lucky exhibitors at the club's nine shell shows.

Money for the club is raised primarily from members' annual dues (\$10.00 for family; \$7.50 for singles) and by wares sold at shell shows; it is spent primarily for program materials and/or speakers.

If you should be in the Indianapolis area and would like to attend a meeting or meet some nice people, contact Marion Magee, 2117 Fisher Avenue, Indianapolis, Indiana 46224, phone: (317) 247-8079.

Theirs is not a wealthy club, but a staunchly loyal group of friendly amateurs who appreciate learning about the miracles of marine life. Neither is theirs a large club, but they have created miracles by working together to put on excellent shell shows, and many a large club might well envy them their success.

News From South Africa: The Strandloper Museum

by Olive Peel

In Johannesburg, South Africa, a delightful tourist attraction, "Gold Reef City," is built around an old gold mine. The original buildings have all been renovated and are being used as exotic jewelry shops, a mint, an old newspaper shop, an old police station, a sweet shop, and so forth — everything with an "olde" flavor — it's really second to none! Within this complex works Ophia Austen, a woman as besotted with shells as we are! She managed to persuade her boss to give her one of these delightful little buildings to make into a shell museum.

She had already gotten in touch with me by telephone and had joined our Conchological Society, so, when her boss agreed, Ophia asked if I would be interested in setting up a shell museum. Of course I was delighted — little did I realize all the work involved. For five months I wrote and phoned members around the country and overseas to ask for donations of shells for the 26 complete exhibits I had to find.

Members were very generous, and in no time I had such exhibits as: The Seven Classes of Mollusca, Land Snails, Bivalves of Southern Africa, Australian Shells, Shells Trawled Off the Coast of Southern Africa, Shells of Mozambique, Interesting Phenomena, a few locality exhibits, and Ophia's most interesting double exhibit of shells found on South African beaches. One of our members, Peter Coetzee, designed the exhibition boxes. I gave my collection of corals to fill a display cabinet, as well as some large shells for a glass shelf exhibit. I also wrote stories and explanations for such marine and molluscan topics as opercula, the periostracum, sea horses, and sea urchins; and I had several maps and paintings of shells framed and hung around the panelled walls. I donated about 500 species from my collection — I reckon you can't take your things with you, so it's good to let others enjoy them!

The week before the opening of the museum, James, an old friend of mine, drove down from the Transvaal to help Peter and me transport all those shells from our home in Durban to Johannesburg. My sister Mickey and her husband took all the corals and the pictures to be framed. Ophia hosted our caravan the evening of our arrival; next morning off we went to Gold Reef City, all excited and nervous.

What a wonderful surprise to see the little building for the first time. Ophia had done a wonderful job setting the museum up for the shells. I had the shells sorted, and each exhibit in its own box. Markus Lussi, another member, had done labels on his computer, magnificent! Eunice Coetzee and her daughter-in-law did all the dirty work — eats and drinks,

21 Clark Road, 4001 Durban, South Africa

label sorting, running chores and preparing cases. Mickey did the artistic displays and supervised, organized, and ordered us around. I managed to set up many displays myself.

For two days we worked flat out, finishing all the displays, and on the third day, we played and rested. The fourth day was the museum opening, followed by a small cocktail party.

The authorities had booked me into one of Johannesburg's magnificent hotels — a luxury suite with king-size brass bed, lovely antiques, and an absolutely exotic bathroom! What a payback! The only mishap was to my car, which James borrowed to drive to his accommodation — it was a rather serious accident, but no one was hurt, and James soon got my car replaced.

The new Strandloper Museum is not only visually beautiful but educational and scientific as well. The contents will belong to the Conchological Society of Southern Africa, but are on permanent loan to the museum. Be sure not to miss it if you visit South Africa. We're very proud of it!



The street in Gold Reef City where the Strandloper Museum stands. — the museum is about halfway down the street on the right.

BOARDTALK...

From our Past President and new Trustee, GLEN DEUEL: Someone commented that the just past COA year has been smooth — that is, no big controversy. There were plenty of rough places, but the board of Directors' members worked together as a harmonious and unselfish team, each pulled a large load (and loved it), and we accomplished many goals without fanfare. Those members who were retired temporarily will be missed, but they will continue to participate when and where possible.

We have a few new replacements who have already proved themselves in the COA and in shell clubs. Your COA is again in good hands.

Your 1991-92 President is probably not the first to notice that at a COA convention everyone is equal — that is, titles, positions and wealth are not barriers to personal relationships.

Thanks for the opportunity to share in so many moving experiences. Thanks again to the Jacksonville Shell Club for unparalleled planning, generosity and hospitality. You have impressed many new members.

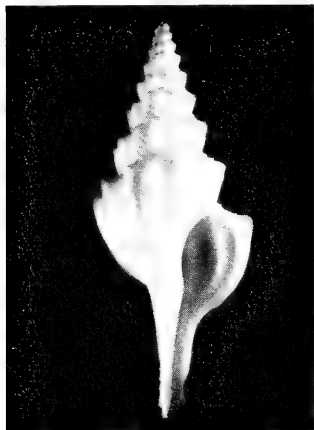
From COA Treasurer WALTER SAGE: It was great to see so many of you at the terrific Jacksonville COA Convention the last week of July. A great time was had by all, and I want to add my words of praise for all the members of the Jacksonville Shell Club, who worked so hard

to make sure that all went so well. Our conventions continue to get better, and I would urge that every COA member seriously consider attending the Panama City convention next July 11-17. You will certainly have a wonderful experience.

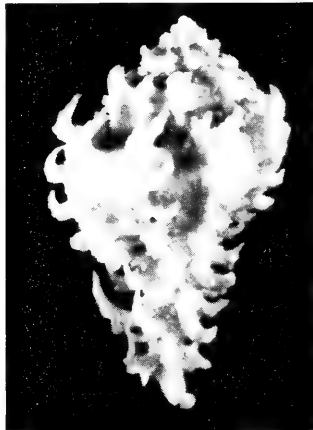
You will notice (we hope!) the **gold renewal form** that accompanies this issue. We ask you all to send in your dues payments as soon as convenient, as this helps us plan for next year's American Conchologist and necessary administrative expenses. At the very least, put the renewal notice in a place where you will remember it when you are ready to send in your check. Bobbie Houchin and I have spent considerable time this year sending reminder notices and have managed to reduce those not paying for 1992 to just over 125. On the plus side, we have added well over 200 new members this year, so a lot of people are recognizing the importance of belonging to COA. I hope you will also notice and appreciate the up-to-date roster we have provided with this issue. And finally, we offer an updated list of sales items, including a new COA enamelled pin, the 20-year **Index** to COA's publication, and the 20 year **History of COA**. We would greatly appreciate your sending orders for these items directly to **Hank Foglino, COA Property Director, 4 Trent Court, Smithtown, NY 11787**.

CARIBBEAN MURICIDAE PART II

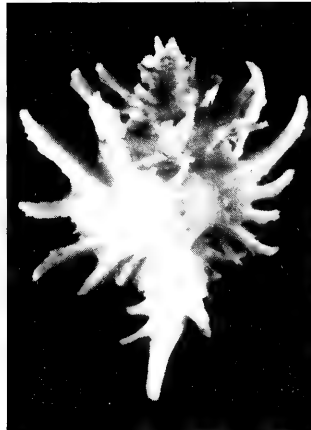
by Kevan and Linda Sunderland



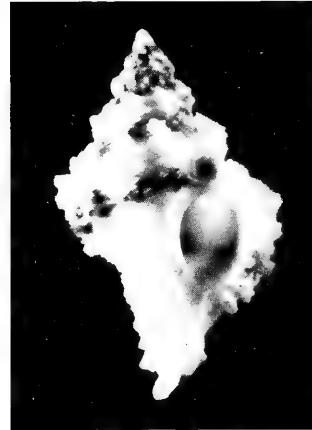
Boreotrophon aculeatus lacunellus (Dall, 1889). 32mm. 200 fms. off Bridgetown, Barbados.



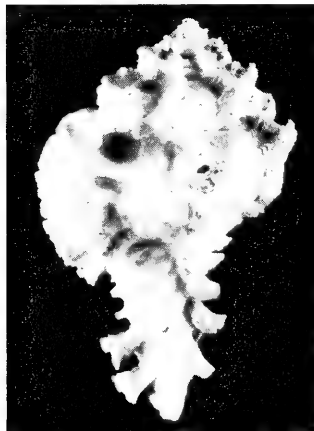
Murexiella fasciatus (E. Vokes, 1970). 30mm. 5', Aruba.



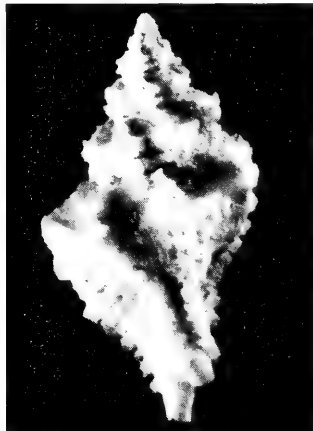
Murexiella hidalgoi Crosse, 1869. 32mm. 90 fms. off Key West, FL.



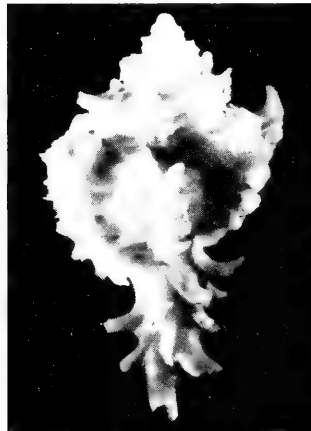
Murexiella kalafuti Petuch, 1987. 17mm. 50 m. off Key West, FL. PARATYPE.



Murexiella leonardhilli Petuch, 1987. 40mm. 10 m. off Salvador, Brazil.



Murexiella levicula (Dall, 1889). 15mm. 40 fms. off Cape Canaveral, FL.



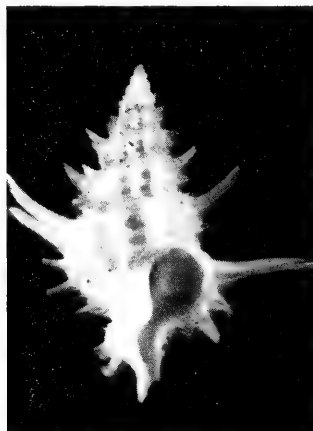
Murexiella taylorae Petuch, 1987. 14mm. 200 m. off Cedar Key, FL. PARATYPE.



Poirieria actinophorus (Dall, 1889). 24mm. 200 fms. off Sandy Lane, Barbados.



Poirieria bowdenensis E. Vokes, 1970. 13mm. 60 fms. off Egmont Key, FL.



Poirieria hystricinus (Dall, 1889). 21mm. 180 fms. off Key West, FL.



Poirieria nuttingi (Dall, 1896). 40mm. 80 fms. Cape San Blas, FL.

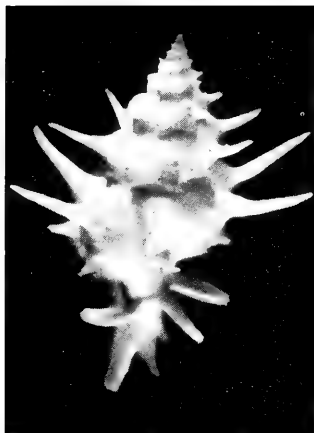


Poirieria oregonia (Bullis, 1964). 79mm. 200 fms. by trawler, Colombia.

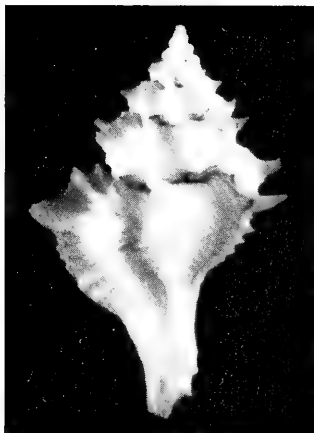
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The intent of these centerfolds is not to distinguish between valid and invalid species, but to provide illustration of taxa not popularly available, for the information of the collector.



Poirieria pazi (Crosse, 1869). 46mm. 140 fms. off Dry Tortugas, FL.



Poirieria petuchi E. Vokes, 1992. 26mm. 200 meters, Gulf of Venezuela. PARATYPE A.



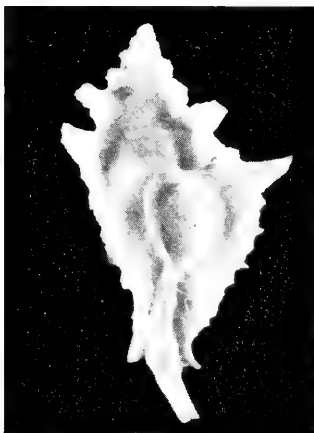
Poirieria c.f. *atlantis* Clench & Farfante, 1945. 23mm. 300 m. Rio Hacha, Goajira, Colombia. (M. Cahill Coll.)



Poirieria species. 4mm. 80' off Gold Rock, Grand Bahama Is.



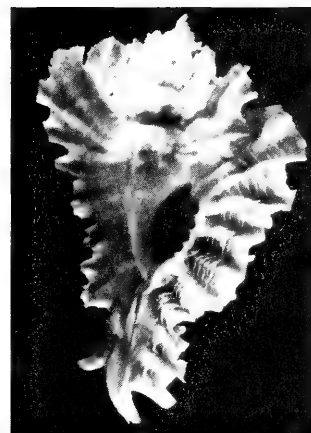
Pterynotus bequaerti (Clench & Farfante, 1945). 39mm. 110 fms. off Fort Myers, FL.



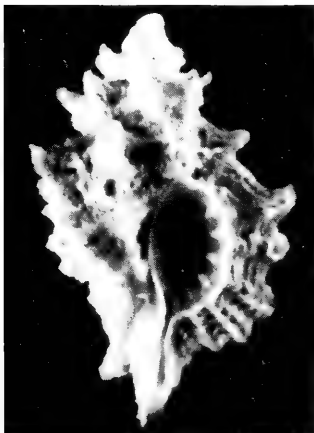
Pterynotus guesti Harasewych & Jensen, 1979. 29mm. 140 fms. Straits of Florida.



Pterynotus phaneus (Dall, 1889). 11mm. 140 fms. off Dry Tortugas, FL.



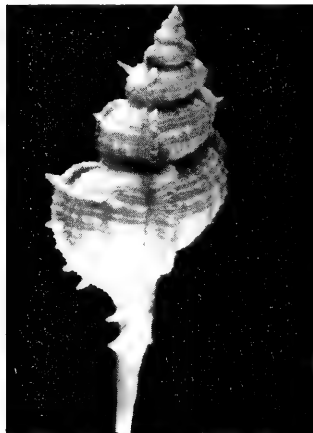
Pterynotus phyllopterus (Lamarck, 1822). 85mm. 80'. Cap Salomon, W. Martinique.



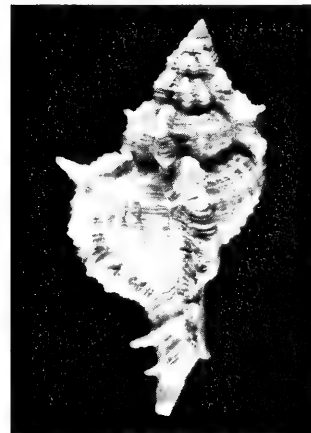
Pygmaepterys germainae Vokes & D'Attilio, 1980. 7mm. 110' Montego Bay, Jamaica.



Siratus beaulti Fischer & Bernardi, 1857. 68mm. 200 fms. off Colombia.



Siratus beaulti form *branchi* Clench, 1953. 107mm. 180 fms. San Salvador, Bahamas.



Siratus springeri Bullis, 1964. 68mm. 300' off Trinidad.

Rios, E.C. 1985. Seashells of Brazil. Fundacao do Universidade do Rio Grande, R.S., Brazil.
Vokes, E.H. Various articles in Tulane Studies in Geology & Paleontology.

Special thanks to Mike Cahill for loan of specimens, to A & P Photo for their continued excellent development and processing skills, and to Dr. Emily H. Vokes for her invaluable and continuing support.

YEAR OF DISCOVERY: Marriott at Sawgrass 1992 COA 20TH ANNIVERSARY CONVENTION

by Vivienne Smith, COA Secretary, 1991-92

Early registration — Sunday, July 26th — really was a discovery about the current popularity of COA! A large percentage of the 324 registrants checked in! Two special treats were planned for these eager participants: first, an enjoyable program by **Bonnie Holiman**, *Shelling Northeast Florida from Land to River to Sea*; and second, an opportunity to add some nice mollusks to their collections from **Sol Weiss**' "Bargain Table." They really were bargains, too, at 50 cents apiece. Everything was gone by Monday afternoon, and a total of \$400.00 went to the COA Treasury — thanks, Sol!

All in all, 29 states were represented by the registrants, and 13 countries; all continents were represented except Antarctica. The Brazilian contingent alone numbered 19!

On Monday, our new 1992 COA Convention T-shirt was "unveiled." **Sue Stephens** had designed another beauty, featuring both *Hexaplex fulvescens* and *Neptunea decemcostata*. Our new COA pin, designed by **Mathilde Duffy**, was also very pleasing to the eye.

Registration continued on Monday morning, followed by a welcome given by **Glen Deuel**, COA President, and **Ruth Abramson**, Jacksonville Shell Club President. An introduction by **Charlotte Lloyd**, **Harry Lee** and **Ruth Abramson** was followed by an invocation by **Dr. James Black**.

A fixture throughout the entire convention, **Kim Newsome** was everywhere we were, making VCR tapes of the various activities. It looks like we have made the big time — on TV!

Following door prize drawings, which continued throughout the convention, our Brazilian friends, **Jose** and **Marcus Coltro**, gave their program, *Hidden Treasures Ilhabela, Sao Paulo*; then came **Jack Lightbourn**'s *Shelling the Deeper Waters of Bermuda*, with interesting information about slit shells. **Wayne Harland** kept everyone spellbound with *Shelling the Caribbean*, and the last program of the day was *High Seas and Hypothermia in Nova Scotia*; *Shelling the Hard Way*, by **Ross Mayhew**.

"King Philip of Spain," dressed appropriately in period costume, greeted us at the Welcome Party Monday evening. We were entertained, while partaking of good food and drink, by a scene from *Cross and Sword*,

St. Augustine's historical drama. During the Welcome Party, an automatic slide show ran, presenting COA happenings from 1979 to the present. Everyone had a grand time visiting with friends they hadn't seen since COA 1991. Jacksonville's **Judy Blocker** was the genius behind the party.

Club Table Sales and Reps were present daily at 8:00 a.m. to sell their pins and/or T-shirts. Jacksonville Shell Club offered a particularly attractive T-shirt, designed by **Sharon Snyder**, featuring the 1992 Convention motif, the Nina, the Pinta and the Santa Maria, along with a map of Florida and a *Hexaplex fulvescens*, Jacksonville's club shell.

Clubs and their representatives there were: **Betty Collins**, Greater Miami Shell Club; **Phil Schneider**, St. Petersburg Shell Club; **Jose Coltro**, Conchologists of Brasil, **Patricia Burke**, Bonita Springs Shell Club; **Al Bridell**, S.W. Florida Conchologists Society; **Mary Bridell**, S.W. Florida Fossil Club; **June Bienstock**, Suncoast Conchologists; **Jordan Star**, Long Island Shell Club; **Mary Owen**, Chicago Shell Club; **Lucy Clampit**, Houston Conchological Society; **Jean Roe**, Coastal Bend Shell Club; **Carol Boswell**, Palmetto Shell Club; **Bobbie Houchin**, Louisville Conchological Society and COA Membership Chairperson; **Margaret Thorsen**, Sanibel-Captiva Shell Club; **Travis Payne**, North Alabama Shell Club; **Josy Wiener**, Broward Shell Club; **Gertrude Moller**, Jacksonville Shell Club; **Jamie Bonsack**, Louisiana Shell Club; **Linda Koestel**, Central Florida Shell Club, **Jim Brunner**, Gulf Coast Shell Club, and **Walter Sage**, New York Shell Club.

A *Mini Shell Show* was on view in the Masters Ballroom, and we could hardly wait until the Business Meeting on Thursday to learn the winners. This was a new idea, and well-received by the attendees.

Tuesday began with **Taina Stone**'s fascinating program on *Shelling in Palawan* (who wouldn't want to go?), and **Peggy Williams**' *Shelling and Shellers*, amusing slides of a few COA members, and what the well-dressed sheller wears to go shelling.

At the **COA Representatives Meeting** on Tuesday, attendees showed much interest in this annual idea session for shell clubs. Thirty-three reps attended: in addition to the above mentioned representatives, there were in attendance: **Joan Field**, Central Florida Shell Club; **Bonnie**



John Baker presents incoming president Doris Underwood with roses from her home club, Astronaut Trail Shell Club. (Photo by Allan Walker)



Intent on a serious malacological discussion are Convention Program Chairman Harry Lee, Joanne Lightfoot, and Jack Lightbourn. (Photo by Allan Walker)

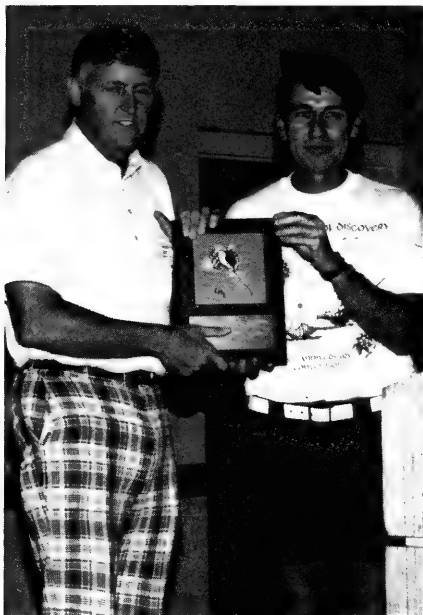


1991-1992 COA President Glen Deuel addresses the membership. (Photo by Allan Walker)

You'd never know it from the serious expression on his face, but Banquet Speaker Russ Jensen has us rolling in the aisles with his slides of mollusks in cartoons - from Ziggy through Gary Larsen to John Timmerman. (Photo by Allan Walker)

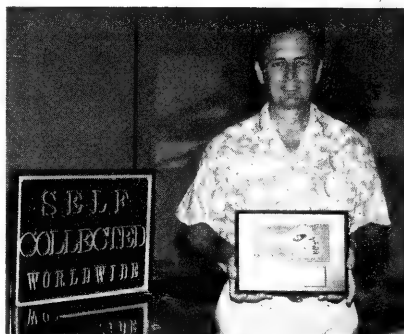


WINNERS OF THE FIRST COA MINI SHELL SHOW



Harry Lee, left, receives the Best Rare Shells trophy from William Frank for an exhibit of dextral and sinistral mollusks. (Photo by Charlotte Lloyd and Jim Trudgen)

Linda and Kevan Sunderland display their two trophies: Shell of the Show for *Lyria leonardi* Emerson, 1985 and Most Outstanding Exhibit From One Area for their Caribbean exhibit. (Photo by Charlotte Lloyd and Jim Trudgen)



Gene Everson shows off one of his trophies, this one for the Best Self Collected Exhibit. Gene also won a trophy for the Most Beautiful Exhibit. (Photo by Charlotte Lloyd and Jim Trudgen)

Ken White, winner of the Most Outstanding Educational Exhibit, won his trophy for an exhibit on mollusks and medicine. (Photo by Charlotte Lloyd and Jim Trudgen)



Holiman, Jacksonville Shell Club; **C.E. Pinkerton**, National Capital Shell Club; **Betty Lawson**, Naples Shell Club; **June Bailey**, Sarasota Shell Club; **Bud Rogers**, Cleveland Shell Club; **Carol Bodine**, Chicago Shell Club; **Louise Compton**, Georgia Shell Club; **Tack Bonsack**, Louisiana Malacological Society; **Betty Jean Piech**, Wilmington Shell Club; **Ed Dunham**, Astronaut Trail Shell Club; **Sharon Stanfield**, North Texas Conchologists; **Phyllis Diegel**, Palm Beach County Shell Club; **Ben Wiener**, Broward Shell Club; **Sam and Betty Collins**, Greater Miami Shell Club; **Twila Bratcher**, Conchological Club of Southern California; **Bunnie Cook**, Hawaiian Malacological Society; **Doug Shelton**, South Alabama Shell Club; **Julius Bienstock**, Suncoast Conchologists; **Doris Underwood**, Vice-President, COA and **Vivienne Smith**, Secretary, COA.

Harry Lee was responsible for the well-planned daily programs., which continued on Tuesday with **Gene Everson's World Wide Shelling** — great photography of many rare or unusual species of mollusks. Later, **Gertrude Moller's** program, **Shells in Art through the Centuries**, held all our attention. Our appreciation of the beauty of the live animal was enhanced by **Bob Lipe's** slides of **Molluscan Mantles**.

Betty Hunter, a retired Latin teacher, awakened everyone's curiosity with **Mental Archaeology: Digging into the Taxonomists' Minds**, a very original program on the reasons some of the early taxonomists gave shells the names they bear. **Betty Jean Piech** then reminded us all of our many past shelling trips with **Reminiscences of a Shell Collector**.

COA 1993, A Prospectus, by **Linda and Jim Brunner**, was a look into the future, to our next COA Convention in Panama City, Florida, to be hosted by the **Gulf Coast Shell Club**. There will be an emphasis on field trips, and we all anticipate another great COA Convention. Don't forget to take your mask, snorkel and fins!

In a special program Tuesday evening, we were exposed to the beautiful photography of **Richie Goldberg** in "**The Rediscovery of Land Shells**." Following this event there was an **Informal Gathering** at the Hospitality Villa for the COA 20th Anniversary Party, complete with an anniversary cake. Our hostess was **Nellie Hawley**, who was also in charge of the hospitality there during the entire week — a tremendous job, the results of which we all enjoyed.

Wednesday at 7:30 a.m., there was the annual **Editors' Meeting** for the editors of club newsletters. **Lynn Scheu**, Editor of **American Conchologist**, conducted this idea session for the shell clubs.

Ten divers enjoyed the **SCUBA Dive Trip** to offshore Mayport, hosted by **Jack Woodruff**. **Linda Koestel**, **Wayne Harland** and **Ana Lima** observed a large group of *Hexaplex fulvescens* through a hole in a wreck. **Ana** was able to get through the hole and pass out some (non-egg-laying) specimens. Some of the species found at the 75 foot depth were: *Pleuroploca gigantea*, *Strombus alatus*, *Laevicardium pictum*, *Anadara floridana*, *Macrocallista maculata*, *Calotropion ostrearum*, *Marginella roscida*, *Nassarius species*, *Conus floridanus*, and *Conus delessertii*.

Karen Schloesser and **Charlie Dixon** hosted two busloads of eager tourists on a tour of historic **St Augustine**. One tour guide, Sandy, was a Minorcan, descendant of the first settlers of St. Augustine. Lunch on our own and a bit of shopping on old St. George Street completed the tour.

We awaited the **COA Auction** with much anticipation. **Bonnie Holiman** was in charge of both the Bid Auction and the Silent Auction, in progress since Monday. **Charlotte Lloyd** was auctioneer for the first half, assisted by **Wayne Harland** and **Harry Lee**; the second half was conducted by **Wayne Groome**, a professional auctioneer. Due to the generosity of COA members who donated items for both auctions, the Bid Auction brought in \$4,949.50, and the Silent Auction raised \$1,861.35. The Jacksonville Shell Club and COA would like to thank the following people for their generous donations for auctions and door prizes — they helped make this convention a great success:

Anonymous, **Ruth and Frank Abramson**, **Rosemary Adams**, **John Baker**, **Yvonne Bequet**, **John Bernard**, **Judy Blocker**, **Eloise & Don Bosch**, **Ruth Botts**, **Twila Bratcher**, **Mary & Al Bridell**, **Horatio Buck**, **Albert Chadwick**, **Edie & Chip Chippeaux**, **Jose & Marcus Coltro**, **William Conklin**, **Bunny & George Cook**, **Robert Cranmer**, **Bruce Crystal**, **Mary D'Aiuto**, **Tina Deloco**, **Marion & Glen Deuel**, **Phyllis Diegel**, **Phil Dietz**, **Mathilde Duffy**, **Gene Everson**, **Peggy Frank**, **Franck Frydman**, **Nancy Garry-Chadwick**, **Alain Gaspard**, **Geynell Gebert**, **Marty Gill**, **Rich Goldberg**, **Betty Hamann**, **George Hapsis**, **Brian Hayes**, **Hawaiian Malacological Society**, **Barbara & Ed Haviland**, **Nellie Hawley**, **Gary Heit**, **Len Hill**, **Sue Hobbs**, **Bonnie**

Holiman, Mari & William Hughes, Betty Hunter, Dottie & Bob Janowsky, Anne Joffe, Grace Johns, Archie Jones, Richard Kelly, Georgetown Laforet, Harry G. Lee, Irene & Fred Leonard, Charlotte M. Lloyd, Irene Longley, Gertrude Moller, Gail Morton, Gayle Motes, Lynn Nathanson, Janet & Bill Paddison, Norm Paschall, Doris Platt, Mique Pinkerton, Arline & Hans Reimann, Glenda Rowse, Lynn Rubinowitz, Joan Rutherford, Walter Sage, Dorothy Schneider, Al Schilling, Clara & Barry Shiflett, Vivienne Smith, Sharon Snyder, Jordan Star, Taina & Mike Stone, Bea Sweet, Doris Underwood, LaVerne Weddle, Don Young, Allan Walker, Josie & Ben Wiener, Jack Woodruff, Peggy Williams.

On Thursday, Dr. Emily Vokes moderated the Symposium—The Present as a Key to the Past—Conchologically. Dr. Fred Thompson and Dr. Henry Chaney were moderators for two workshops following the Symposium. All were very well received by COA members, and we will look forward to more programs of this sort in the future.

The 1992 General Business Meeting was conducted by President Glen Deuel. 1991 Minutes were approved. Winners of the first COA Mini Shell Show were disclosed (see photos), and lucky winners of the COA Raffle were then announced. Mary Trauernicht won the *Spondylus linguaefelis* donated by Donald Dan. Mary D'Aiuto won the *Pleurotomaria teramachii* Al Deynzer donated, and the Tiffany-style limpet lamp Charlotte Lloyd donated was won by former COA President Don Young. Ben Weiner did a great job selling raffle tickets: \$774.00.

Glen Deuel welcomed everyone, then recognized the 6 past presidents of COA who attended this Convention—Richard Goldberg, Alan Gittleman, Peggy Williams, Hank Foglino, Don Young, and Anne Joffe. Al Chadwick, representing the Nominating Committee, presented the new slate of officers which was voted in unanimously.

New president Doris Underwood, presented Glen Deuel with a plaque, noting the good work he has done in the past. The meeting was

adjourned and everyone rushed off to the Dealers Bourse, due to begin at 4:00.

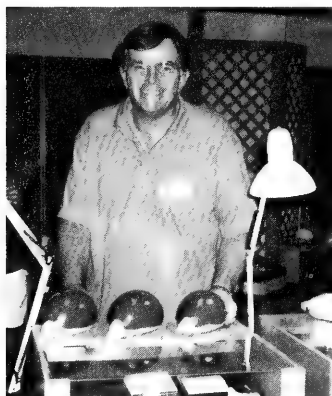
The Bourse, coordinated by Ruth and Frank Abramson, was held in a large, pleasant room separate from the banquet room. Thirty-five dealers were present, including some from Australia, the Philippines, Brazil, the Netherlands, France, Luxembourg and Canada, and at least 11 U.S. states were represented. The Bourse was nicely planned, with lots of area to move around in, and with lots of new species available to the curious sheller. On Friday, the dealers were still busy.

Ruth Abramson also arranged for Stamp Covers, with M.K. Maxwell in charge of selling the philatelic covers. Everyone at the banquet received a cover as a favor—a bonus for all stamp collectors.

"Stump the Experts" Shell ID Clinic, on Friday afternoon, was a marvelous idea for the serious collector. The "Experts" were Harry Lee, Tucker Abbott and Walter Sage.

Friday at 6:30 p.m. was the Cocktail Hour, followed by the Banquet in the Masters Ballroom. Betty Hunter and Nellie Hawley were in charge of the decorations for the Banquet, and one happy person at each table left that evening with the lovely shell bouquet centerpiece. Charlotte was in charge of Banquet accommodations, and she expressed grateful thanks to all the members of JSC who put this convention together. John Baker presented new COA President Underwood with a large bouquet of red roses from her own the Astronaut Trail Shell Club. Our old friend Russ Jensen was guest speaker, and gave us a very humorous program, *A Less Serious Scrutiny of Malacology*. After this, everyone left with a warm feeling in their hearts at the close of another COA Convention, knowing well that we might not see these friends again until July 1993!

Two post-convention trips were provided for those who just couldn't go home yet: Harry Lee and Hank Chaney hosted about 18 people on a visit to the Florida Museum of Natural History at

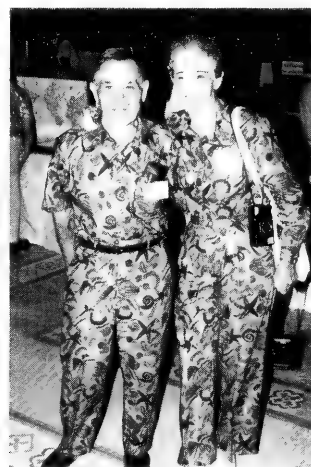


Larry Strange shows off his array of giant *Cypraea aurantium* (fabulous fakes, of course) at his booth in the Bourse. (Photo by Chris Takahashi)



Next Year's Convention Chairmen, Jim and Linda Brunner, of the Gulf Coast Shell Club. (Photo by Linda Sunderland)

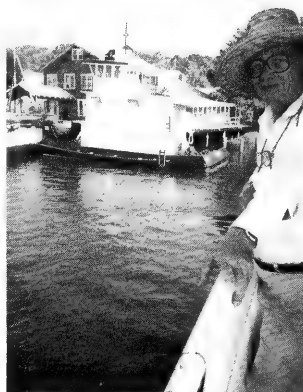
Ben and Josie Wiener show off some of their matching shell duds at the Welcome Party. (Photo by Charlotte Lloyd and Jim Trudgen)



COA Treasurer Walter Sage takes a break from counting T-shirts and money to show off his new "collecting bag." Good hunting, Walter! (Photo by Linda Sunderland)



Convention Chairman Charlotte Lloyd



Tucker Abbott aboard the ferry en route to Cumberland Island. (Photo by Gertrude Moller)



While touring St. Augustine, Travis Payne steals a moment to search for shells in a crevice of the sea wall near the old fort. (Photo by Linda Sunderland)



Gertrude Moller shows off the Jacksonville Shell Club's "Special Edition" convention T-shirts.

Gainesville. With the help of **Douglas Jones**, **Kurt Auffenberg** and **Roger Portell**, it was a delightful learning experience. The Paleontology Department was exceptionally interesting. Anyone who has not visited this museum is urged to do so.

Gracious hostesses **Karen Schloesser** and **Crystal Woodruff** took 63 people shelling on **Cumberland Island**. It was a hot day to walk the mile and a half to the ocean, but it was beautiful when we got there. A small informative museum is near the ferry dock. Lots of dead *Busycon carica* were found, and at least two beautiful live *Busycon canaliculatum* were discovered, but not taken — no live shells may be taken from the island. The periostracum on the channelled whelks was hairlike and beautiful. One pandora clam was found, and several Epitoniidae, along with an unusual Nassariidae species. On the return trip, we observed a long submarine passing by — possibly a nuclear sub. It was indeed an enjoyable trip.



Louise Compton waves at the camera from a lush tropical garden - the Cascades Lounge in the hotel lobby. (Photo by Charlotte Lloyd and Jim Trudgen)

PUBLICATIONS:

Many shell clubs publish newsletters, some of them rather elaborate. Perhaps the most ambitious and long-lived undertaking is the Hawaiian Malacological Union's **Hawaiian Shell News**. But San Diego Shell Club and Editor Carole Hertz issue a rather unusual publication, unique in the shell club world. **The Festivus**, as it's called, should be well known to all serious shellers, certainly to all students of our Eastern Pacific fauna. We asked Carole to tell us more about **The Festivus**, and about its very important supplements. This is what she writes:

THE FESTIVUS, PUBLICATION OF THE SAN DIEGO SHELL CLUB

The Festivus, publication of the San Diego Shell Club, is in its 22nd year of continuous publication with eleven issues published annually (no December issue) and occasional supplements, usually larger in size and scope. The monthly issues include Club news, general articles on such subjects as shell collecting trips, methods for cleaning shells and methods for dredging; and scientific articles on systematics, distributional information on various species, and field and aquarium observations. **The Festivus** strives to bridge the gap between club newsletters and scientific journals. Unlike newsletters, **The Festivus** does not include chatty news about members, poems, solicitations for shell exchanges, advertisements, puzzles, cartoons, and does not reprint previously published articles. In 1985 we set up a review board of professional malacologists, now numbering eleven, to evaluate serious articles submitted to **The Festivus** for publication. Unlike professional journals, however, **The Festivus** does not publish new taxa.

In its first years, **The Festivus** was typed on a manual typewriter and reproduced on a mimeograph machine. By 1972 we had begun to use black and white photographs and in 1989 we had our first color plate. It wasn't until August of 1990 that we leaped into the technological age and began putting **The Festivus** on computer. We now had columns without counting letters!

The Festivus is distributed to subscribers worldwide and subscriptions are \$12.00 per year domestic, \$15.00 overseas surface mail and \$25.00 overseas airmail. Back issues of **The Festivus** are available although some issues are only obtainable as xeroxed copies (1980-1991 @ \$12.00 per volume plus postage. 1970-1979 @ \$10.00 per volume plus postage). For subscription/membership, send your check to the San Diego Shell Club, 3883 Mt. Blackburn Ave., San Diego, CA 92111, USA.

In addition to our regular monthly issues, **The Festivus** has published five well-received supplements, available for sale to the public. They are listed below.

Available Supplements to **The Festivus**

- 1991 **Additions to the Panamic Province Bivalve (Mollusca) Literature 1971 to 1990**, by Carol Skoglund, (22:i-v+74pp.) \$11.00 postpaid domestic, \$12.00 overseas surface, \$15.00 overseas airmail.
- 1990 **Additions to the Panamic Province Opisthobranch (Mollusca) Literature 1971-1990**, by Carol Skoglund (22:i-iii+27pp.) \$6.00 postpaid domestic, \$7.00 overseas surface, \$12.00 overseas airmail.
- 1988 **An Illustrated Catalogue of the Family Typhidae Cossman, 1903** by D'Attilio & Hertz, (20:73pp., 109 figs) \$11.00 postpaid domestic, \$12.00 overseas surface, \$15.50 overseas airmail.
- 1986 **A Faunal Study of the Bivalves of San Felipe and Environs, Gulf of California, from the Gemmell Collection (1965-1976)** by Gemmell, Myers & Hertz (18:1-72pp., 78 figs) \$9.00 postpaid domestic, \$10.00 overseas surface, \$15.50 overseas airmail.
- 1983 **Illustration of the Types Named by S. Stillman Berry in his "Leaflets in Malacology"** by Carole M. Hertz (15:1-42pp., 92 photos) \$6.50 postpaid domestic, \$7.50 overseas surface, \$12.00 overseas airmail.

—Carole M. Hertz, editor

INFORMATION WANTED:

Information on the seashells of BELIZE for an upcoming book. I am looking for self-collected lists from divers and collectors listing all species by location and habitat. Duplicate specimens from different locations within Belize also appreciated. Please write to: Casey Lamberton, 18 Bon Aire Circle #603, Suffern, New York 10901.

DID YOU GET THIS ADDRESS CHANGE?

The National Capitol Shell Club wishes to remind everyone that all correspondence for the club should come to Mique Pinkerton, 1324 Westmoreland Drive, Warrenton, VA 22186

Renew your membership in COA now. Use that gold form today, before you lose it.

GROUND BROKEN FOR SHELL MUSEUM

For an island that part-time winter residents suspect goes to sleep in the summer, Sanibel, Florida, buzzed with enough July excitement to rival that of any town in cooler climes. First there was the traditional July Fourth parade, city party and fireworks display. Then came dual events to celebrate the beginning of construction of the long-awaited Bailey-Matthews Shell Museum.

Barely had the rockets' red glare faded when, on July 6, 70 dignitaries and major supporters were transported by the picturesque Sanibel Trolley to the museum's construction site in mid-island. Museum President Bill Hallstead welcomed the guests, the museum's Founding Director R. Tucker Abbott offered background on the project, and board member and TV star "Perry Mason" himself — Raymond Burr — gave the official signal to begin work. A pile driver whammed the first test pile eight mighty licks, and then the guests were invited to a celebration brunch at the nearby Timbers Restaurant.

Among those at the ground breaking were U.S. Congressman Porter Goss and his wife, who was an early member of the museum board; representatives of State Senator Fred Dudley, State Representative J. Keith Arnold, and Lee County Commissioners John Manning and Ray Judah, and the City of Sanibel. Honored guests also included major museum supporters and COA members Margaret Thorsen, Ede Mugridge, and Al and Mary Bridell; the museum's Past President and founder of the original board, Betts Johnson; the three Bailey brothers who donated the land for the project; the museum's architect George Tuttle, AIA; and members of local and regional media.

In 90-degree heat, the ceremony was brief. At the brunch, Tucker Abbott inducted Raymond Burr and his business associate, Robert Benevides, also a board member, into the museum's "Order of the Purple Pecten," an award for outstanding service to the project.

The following evening, 350 guests, including many members of the highly supportive Sanibel-Captiva Shell Club and Southwest Florida Conchologist Society attended the Burr-B-Q at the Sanibel Community Center. This informal get-together enabled Burr's fans to meet him personally and to enjoy a hamburger-hot dog supper catered by Rollin' Pit of nearby Bonita Springs. The Community Center's vast auditorium and adjacent middle room were decorated by COA member Jean Hallstead with dozens of suspended colorful kites and balloon "flowers." Chrysanthemum arrangements in sand buckets graced the 30 tables, and the stage was brightened by a beach scene. There were no speeches, just a good ol' Sanibel summertime party.

SHELL SHOWS: LOUISIANA IN OCTOBER

The Louisiana Malacological Society is holding a shell show in October, the 24th and 25th. It will be staged in the Baton Rouge Garden Center, 7950 Independence Boulevard, Baton Rouge, LA. Hours are from 10-6 on Saturday, and 10-5 on Sunday. Admission is free. Debbie Duval is coordinator. For more information, write or phone her at 10 Waco Street, Houma, LA 70360. Phone (504) 876-3646 at soon as possible.

Jean-Claude Six, 1012 Route Nationale, 62231 Sangatte, France, wishes to exchange shells. He would like to hear from American collectors who are interested in Miocene and Eocene fossils, and who collect Recent shells other than Conidae and Cypraeidae.

At the construction site, clearing begun for the ground breaking will continue, with highly invasive Brazilian pepper trees to be removed from all 8 acres. Following the clearing, a 70-foot-long entrance bridge will be installed across a wetlands swale. Construction on the building itself should be underway by fall with completion anticipated in late 1993.

With \$860,000 pledged or in hand, the capital campaign is two thirds of the way toward its \$1,250,000 goal. "Additional support is needed and most welcome," says Board President Hallstead. "The bridge alone will cost \$56,000, plus installation. But now that we're actually underway on-site, we are optimistic about raising the final third of the funding needed." For details on the project, write or call: Shell Museum, 2440 Palm Ridge Road, Suite 9, Sanibel, FL 33957 Phone (813) 395-2233.



Left to right: Museum Board President (and COA member) Bill Hallstead; board member and actor Raymond Burr who gave the official "start work" signal; museum's Founding Director (and COA member) R. Tucker Abbott; board member and TV producer Robert Benevides.

IN MEMORIAM — RENATO MOSCATELLI

Renato Moscatelli was one of the most distinguished members of Brazilian malacology and conchology. An Italian citizen, born in Cairo, Egypt on July 31, 1926, Mr. Moscatelli had a very busy life. He lived in Egypt and knew the Middle East until the Second World War. Then he returned to Italy where he lived until the age of 21 when he moved to Brazil. According to his plans, Brazil would be the first stop in a never-ending series of trips in his life. But this country and, mainly, Wilma Nano made him change his mind. He fell in love with Brazil and became an affectionate husband, and then a loving father to Regina Paola.

He worked very hard until he became a partner of one of the most famous offices for the production of graphic arts in Brazil. He became interested in shells and stamps simultaneously, in 1974. As an avid collector, he built a beautiful collection, specialized in Strombus (they are now in the Oceanographic Museum of Rio Grande), miters and pectens. His passion for shells caused him to provide financial support for the Brazilian Malacological Society for more than eight years, and create the Brazilian Conchologists Society, Conquiliologistas do Brasil, in 1989. He traveled all over the world searching for shells. He encouraged and supported many museums and institutions, and became a member of several shell clubs worldwide. He wrote his first book in 1984 — *Seashells on Stamps*, followed by *The Superfamily Strombacea from the Western Atlantic*, in 1987. In the past five years he worked hard to publish the second edition of *Seashells on Stamps*, an updated color version. He finally managed to have his book published last June — a limited edition of excellent quality. In the past few years he bravely fought against a cancer that killed him on his birthday, July 31, 1992. We are sure that all his friends will miss him forever.

—Jose Coltro, Jr.

BOOK REVIEWS...

A Field Guide to Molluscan Spawn, Volume II. By Beatrice E. Winner, 1992. 94pp., illus. Plastic ring binding. Privately published by the author. E.B.M., P.O. Box 14923, North Palm Beach, FL 33408. \$12.95, plus \$1.50 handling.

This second volume dealing with the egg capsules of gastropods is an improvement over the first volume, and this time includes illustrations of the adults and their spawn of 28 species. Fourteen marine snails, eight from the Western Atlantic, the others from Australia, New Zealand, and the Gulf of Panama, are included. A welcome addition are illustrations and information on seven freshwater, operculate viviparoid snails, including the five *Pomacea* Apple Snail species now living in southern Florida. Three egg-laying land snails and three opisthobranchs round off the roster. A short glossary and bibliography are useful.

—R. Tucker Abbott

Seashells on Stamps by Renato Moscatelli. 1992. Volume 1 (text), 439 pp., Volume 2 (illustrations and index), 269 pp. Privately published in Brazil by the author. Available from American Malacologists, Inc. at US \$60.00

Over the years there have been several books published on shells and stamps. All have been useful to the many collectors who have been interested in both, but none of the previous works have been as comprehensive or as well crafted as this two-volume treatise by a noted Brazilian conchologist. The present set has built on a 1984 Portuguese edition (now sold out) and all who are interested in shells or stamps or both will find this the book they have always wanted to own.

I can best summarize the volumes by quoting from the press release supplied by the author when he sent the volumes to me this past June. The work is a monument to the author's fortitude and energy — he continued to work on the book as he battled the cancer that finally claimed his life on July 31. I am certain that I will be among many who will find these volumes an invaluable tool. Especially noteworthy is the fact that the author has listed the species of mollusks portrayed on shell stamps in systematic order — indeed, he has done a remarkably fine job.

To quote: "A long awaited work is finally available to the conchologist and philatelist.... This indispensable work is divided into two volumes: the 439-page first volume contains careful descriptions of 450 shell species with such information as the shell's scientific name, its author, its date, its popular name, and its synonyms. Enriching the detailed description on each shell is also information on average size, range, record sizes, biological information, as well as remarks and notes on each shell depicted on the stamps, including philatelic data on all the shell stamps, emitted up to printing. Each stamp is also identified with its Yvert et Tellier, Scott, and Michel catalogue number.

"The 250 page second volume contains over 1,200 photographs of all the existing shell stamps printed on glossy paper and in full color. The second volume also presents various postmarks and cancellations in which shells appear.

"The minutely researched work was divided into two volumes in order to facilitate use and research by eliminating constant page turning and allowing the reader to have both the illustration and description at hand. The edition is softbound and edited by the author, (15 x 21 cm (6" X 8")).... This outstanding and unique edition does not conform to your normal standards. It is an indispensable research tool and cannot be left out of any serious library, and that was lacking in today's specialized literature. It is the only edition to contain all shell stamps in color."

Whether you collect shell stamps or not, these volumes are a joy to possess and great fun to work with. I am amazed at the wealth of information S. Moscatelli has shared with us, and congratulate him posthumously on a job well done. I personally do not collect shell stamps, but I must confess that these volumes could make me into a "malacophilatelist" with very little effort. And perhaps this is the most welcome accolade any author could wish for. I will treasure this treatise, and hope to be able to spend the time necessary to appreciate the volumes to their fullest.

—W.S.

The Encyclopedia of Seashells by Gary Rosenberg. 1992. Dorset Press, New York. 224pp., hard cover. many color photos. \$19.95.

One of the great book "bargains" to come out in recent years is this superbly crafted, fact-filled volume that will surely serve as a primary reference book to all interested in even the smallest way in mollusks. There is surely "something here for everyone" and many will find this an excellent introduction to the study of mollusks and a guide to many mollusk families.

The author has chosen to discuss and illustrate 250 species of mollusks, covering as many marine families as possible, in a compact and most informative fashion. The 14-page introduction discusses what a mollusk is, explaining binominal nomenclature, and treats relationships and diversity, species, family, and classification. The bulk of the text is devoted to the species accounts, beginning with the more primitive snails, working through shelled opisthobranchs, then bivalves, scaphopods, and chitons. Treatment begins with the family, then genus and species with author and date described, common name, size, distribution, discussion and references. Dr. Rosenberg has obviously given great care to his arrangement, and we can be grateful for this excellent addition to molluscan literature. One publisher's error should be pointed out — instead of *Pyramidella acus* on page 111, the illustration of *Cerithiella metula* from p. 84 has been included in reverse view.

The final segment is entitled, "Seashells Through the Ages," and covers culture and commerce, religion, folklore and mythology, and collecting shells. In this last section are included notes on computerizing a collection. Supplementary material includes a geographical index to shell books, a glossary, a bibliography, and an index to the shells included in the body of the text.

This is a book that will provide the reader with many stimulating hours of learning, and is certain to encourage the student to search further for data on mollusks and their shells. We can enjoy the book, marvel at the wonders of nature, and appreciate the beauty of the molluscan shell, and all at a most reasonable price. I encourage everyone interested in mollusks to buy this book as soon as possible — there's no point in putting off the opportunity to benefit from this superb book.

—W.S.

Neptune's Garden - Shells A to Z by Wendy Frost. 1992 Little, Brown and Company, New York. 96pp. 275 hand colored illustrations. \$19.95.

One of the most pleasantly surprising and charming books to cross my desk in a long while reached me this June. I must admit that just from hearing the title I was prepared for another children's book, but this slim volume is much more than just shells for the beginner. The author, an Australian native who now lives in Manhattan, is a professional artist and illustrator, and her love of natural objects clearly shows in the meticulous care with which she shares her love for shells. She has taken the shells she chooses to talk about and illustrate from those she collected as a child, those she has gathered in this country, and those she has been given. She has taken the trouble to learn scientific facts about the shells she loves, and it is very satisfying to page through this book and appreciate the beauty of these shells and her special talents as an artist.

Not only does she arrange her special shells alphabetically in a most original way; she has selected other sea creatures she considers special, discusses various ways man has used shells as ornament, in ritual, and for food, and even gives some delightful recipes that anyone can prepare. I feel certain that even the most seasoned professional will find this book interesting and stimulating.

From abalone to zebra volute, the reader will be captivated by the choices Ms. Frost has made. We can all identify with cowries and cones, harps and limpets, murex, oysters and tritons, and will find this book truly invigorating — an impetus to learn more. Tucker Abbott is correct in saying that this is a "children's book for adults," but it is much more than that. Go out and buy it — you will find it well worth the rather steep price of \$19.95. And try the recipes — I am sure you will find them as delectable as the entire volume.

—W.S.

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SIT'N & MUS'N

by *Pinky Pinkerton*

Recently, while S&M'n and trying to connect the old age spots on my hands, I started thinking about what a wonderful hobby shell collecting is. It provides something for everyone: folks who do crafts, folks who self-collect, and so on.

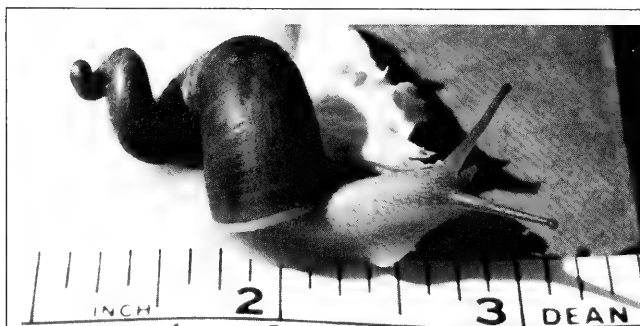
Also, there are so many ways to collect — beach combing, shallow water, rock turning, snorkeling, SCUBA, dredging, netting, and trapping. And oh yes! There are other ways to collect shells. Some order their shells from dealers and never pay. And some steal from the collections of others.

I wonder how these thieves feel about their collections. Do they point with pride to a choice specimen and say, "I got this from Such 'N' Such Dealer, and it didn't cost me a cent!" Or perhaps, "Look at this beauty! I stole it from a fellow collector when he wasn't looking. Isn't it great?"

And recently, two new ways to collect have surfaced. The thief uses a known collector's name to place a large order with a dealer. The "customer" states that he will be on vacation, and to please not send the order to his home address, but instead to a P.O. box in Florida. The thief then picks up his parcel, and of course the dealer never receives payment from this SCAM SCUM. The innocent collectors whose names are being used have no idea this is happening until they receive a bill from the dealer. This loss hurts the dealer and harms the reputation of innocent collectors.

The second thief is TRAITOR TRADER. He visited the COA Bourse this year and took a very expensive shell from a dealer's table, replacing it with a poor quality shell of the same species. Traitor Trader had come prepared to commit this crime!

I hope that you enjoy your ill-gotten loot, SS and TT, for someday you ARE going to be caught and face the authorities. Have a nice day.



This edible Brown Snail, *Helix aspersa* Muller, was discovered in a backyard garden in Sydney, Australia. An early freak accident caused it to grow in the shape of a cornucopia. (Thanks to Tucker Abbott for this photo by Bernice Beechey.)

FAREWELL TO A FRIEND

by *John L. Jacobs*

It is my unfortunate and sad duty to report the passing of my dearest friend, Cheryl T. Richardson, June 18th. Cheryl was a longtime member of the Hawaiian Malacological Society and a more recent member of the Conchologists of America.

Throughout the years, Cheryl specialized in several families including Mitridae, Olividae, and most recently the Florida tree snails of the genus Liguus. She studied the tree snails' habitat and lifestyle, and even tried a breeding experiment in a terrarium.

Cheryl corresponded with HMS member Elmer Leehman for many years before his stroke and with many other collectors around the world. Due to the cancer which eventually took her life, she was unable to write during the last several weeks, a fact which saddened her.

On a personal note: I am what I am because of her. Cheryl approached a shy young man at his first meeting of the Reef Roamers Shell Club on Anderson Air Force Base, Guam, in 1975. She asked me if I would like to join her team for the shell contest. Our team won the contest despite me. Cheryl and I became good friends, and our friendship resisted time and distance. Thanks to her my interest in collecting grew into a scientific pursuit which has determined the course of my continuing college education.

To say she is missed is an understatement. I know she is on some distant shore, released from the pain she was forced to endure, collecting and studying wonderful new shells.

Until we meet again, my friend, I wish you happy shelling.

IN MEMORIAM

Waverley H. Harmon
Walter H. Jacobs
Renato Moscatelli
Cheryl T. Richardson
Robert E. Scribner

HUGH STIX DIES

Noted shell enthusiast and author Hugh Sylvan Stix died July 21 in New York. The 85 year old collector and his wife, Marguerite, who died in 1975, and R. Tucker Abbott, published the 1969 book, "The Shell: Five Hundred Million Years of Inspired Design."

Stix founded, owned and managed the Artists Gallery on East 57th Street in Manhattan for many years. His wife was a painter, sculptor and designer of shell jewelry.

Our sympathies to Joan Scribner of the Marco Island Shell Club, who recently lost her husband, Robert. Joan writes that she wishes to sell their collection, and asks anyone interested in "Cypraea, Murex, Tritons or other shells" to please write to her for a list at 1012 S. Collier #112, Marco, FL 33937. Phone 813-394-0399.



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MASTERS AWARD ESTABLISHED

The Shell Museum and Educational Foundation, Inc., Sanibel Island, Florida, announces the establishment of the Masters Award, to be given at shell shows that meet the Foundation's eligibility requirements.

For the past three years, shell exhibitors have seen this award presented at the Sanibel Shell Fair. In 1992 it was also presented at the Astronaut Trail Shell Show in Melbourne, Florida. The trophy program was, to this point, on a trial basis. But the excitement that the Masters Award has generated at these shows has convinced the Foundation that the award is viable, and it will now be formally organized.

The Masters Award is established to encourage the showing of high quality exhibits that have previously won any of the major "broad category" honors at shell shows; i.e., the American Museum of Natural History Award, the Dupont Trophy, the Smithsonian Institution Award, or our own Conchologists of America Award. Competitors enter their exhibits in a separate stand-alone Masters Award Category. The winner takes the

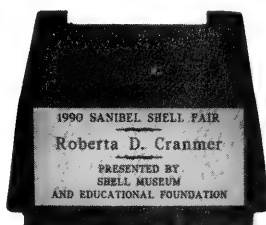
trophy. There are no second or third place ribbons.

An elegant trophy has been designed to embody this highest shell exhibit honor. The 15" high trophy is a clear acrylic obelisk mounted on a dark, simulated marble base. A gold scallop and the words, "Masters Award" is imbedded in the obelisk. The entire cost of the trophies is currently underwritten by Donald Dan, our COA Trophy Chairman and a specimen shell dealer; Don has also volunteered to administer the trophy program for the Shell Museum Foundation.

For 1993, the Astronaut Trail Shell Show and the Sanibel Shell Fair have been selected to continue to host this award. To learn more about competing in these shows for the Masters Award, please contact the Astronaut Trail Shell Club, c/o Bobbi & Jim Cordy, 385 Needle Blvd., Merritt Island, FL 32953 (1993 show dates: Jan. 23-24); and the Sanibel Captiva Shell Club, c/o Georgette Laforet, 1119 Periwinkle Way, # 176, Sanibel Island, FL 33957 (1993 show dates: March 4-7).



Roberta Cranmer, winner of the first Masters Award Trophy, given at the 1990 Sanibel Shell Fair. Her exhibit: Molluscan Treasures from World Oceans. (photo by Paul Schuhmann)



The coveted Masters Award Trophy can be awarded only to exhibits qualified by winning another major "broad category" award. (photo by Paul Schuhmann.)

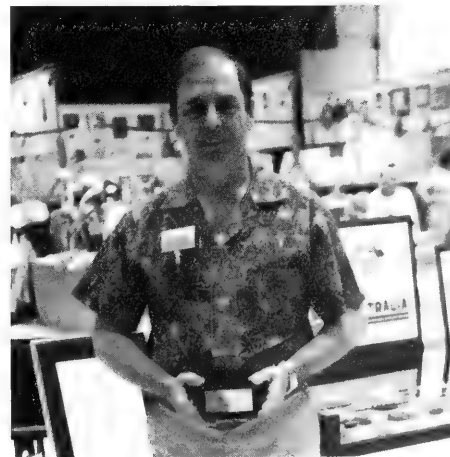


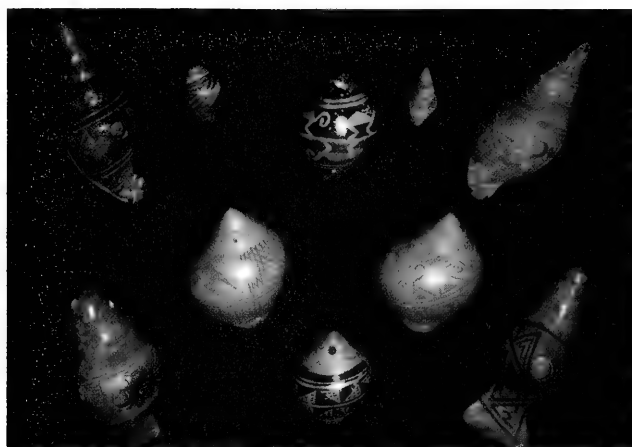
Sue Stephens and her Masters Award Trophy at the 1992 Sanibel Shell Fair. Sue's exhibit was "The Genus Chicoreus Worldwide."



Tucker Abbott congratulates Donna and Wayne Harland, winners of the 1991 Masters Award Trophy at the Sanibel Shell Fair for their exhibit, "Self-Collected Caribbean Shells."

This year, Gene Everson won the very first Masters Award Trophy to be offered at the Astronaut Trail Shell Club. His exhibit was "Australian Seashells."





SHELL ART SOUTH OF THE BORDER

As many of our readers are aware, Charlie Glass, former editor of The COA Bulletin and, with Bob Foster, co-proprietor of The Abbey Specimen Shells, has moved to Mexico to ride that other hobby horse of his, Cactus. (Doesn't sound at all like a smooth ride, does it?) He's in charge of all the cactus and succulents at the new botanical garden, "Can Te," in San Miguel de Allende, and is having the time of his life. But in spite of his preoccupation with things spiny, he still has an eye out for things shelly. He sends along a picture of unusual shell art.

The photo depicts a collection of pre-hispanic ceramic shells from the Carchi region of Ecuador. Charlie reports that they are "so fastidiously done that they even have the columella!" They are in the collection of Dr. Calaway Dodson of Quito, Ecuador.



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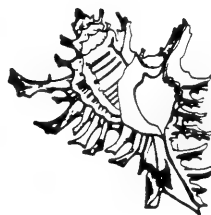
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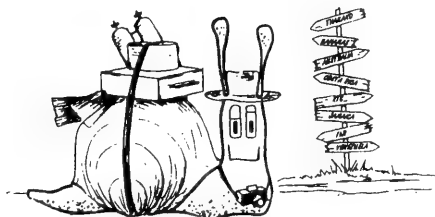
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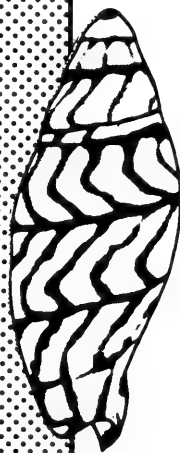
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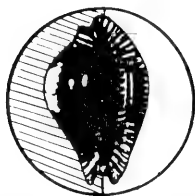
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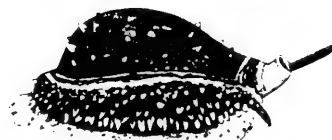
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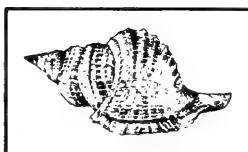


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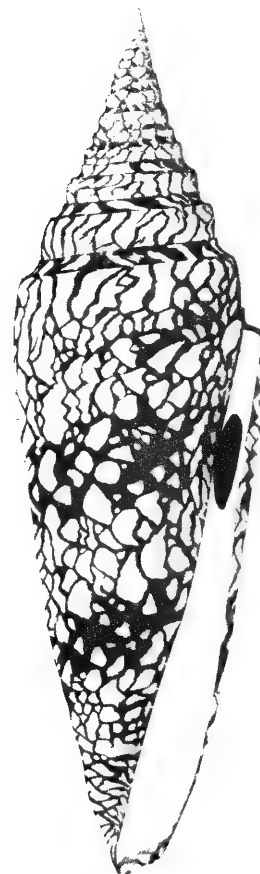
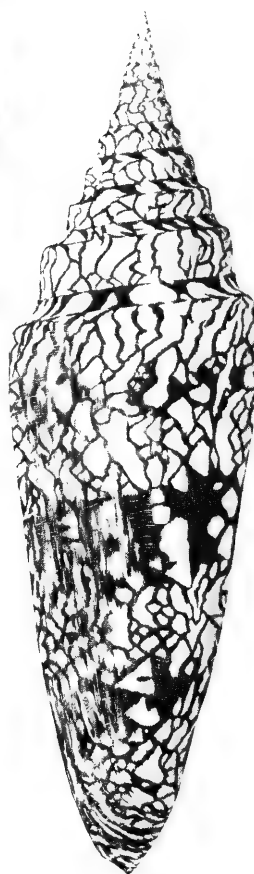
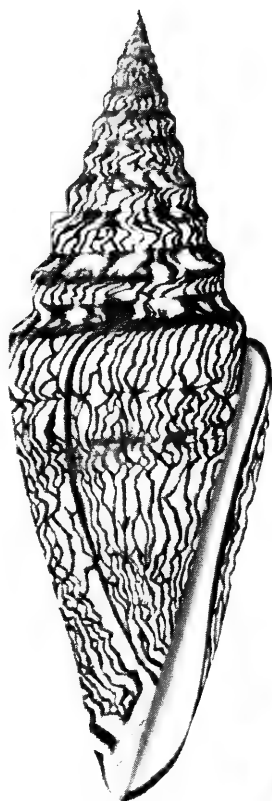
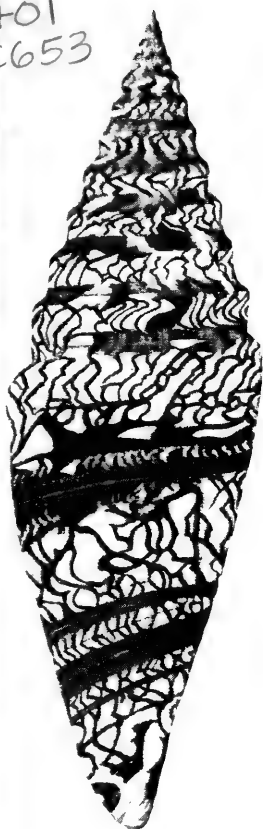
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In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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COVER: Walter Carpenter depicts four specimens from his and his wife Peggy's collection, a single composition combining three of his original oils. From upper left, *Conus excelsus* Sowerby III, 1908; left, 72.9mm, Balicasag Island, Bohol, Philippines, trapped, 1987, and right, 70.4mm, Balut Island, Mindanao, Philippines, in net, 1980; *Vexillum citrinum* Gmelin, 1791, 61.2mm, Siasi, Sulu Sea, Philippines, by diver, 1979; and two *Conus milneedwardsi* Jousseaume, 1894, 168.3mm, Natal, S. Africa, by diver, 1989.

A self-taught artist, Walter says he learned about oil painting as he went along: "I think just about anybody could do what I do with shell paintings by trying to be a careful observer, attention to detail, and patience. Knowing when to stop is important, too!" We think Walter is being too modest. He fails to mention the matter of talent, with which he seems to be richly endowed. Collectors since a 1950 Florida picnic on Marco, Walter and Peggy now live in northern Virginia. Walter is retired (from the Army, the Library of Congress, the IRS, and the Bureau of Alcohol, Tobacco and Firearms!) The Carpenters were two of the founders of the National Capital Shell Club 32 years ago.

PRESIDENT'S MESSAGE

In the past two years the Florida legislature has passed a tremendous number of bills that seem to get little publicity on the local level. One of those bills deals with **sales tax** and has a direct effect on the **COA Bourse** and many **Florida shell shows**.

All dealers who participate in the Convention Bourse and shell shows in Florida are required to obtain a Certificate of Registration, collect sales tax, and remit it to the Department of Revenue.

An **out-of-state** dealer may not need a Certificate of Registration if he participates in no more than two events per year. He will be given a "Special Event" number and there is no fee.

Florida clubs which sponsor shell shows with dealers must also collect sales tax on items they sell. If they hold no more than two events per year with sales, they may be given a "Special Event" number, no fee. Florida clubs who charge admission to their shows must also collect sales tax on same. Again, this can be done under the "Special Event" number and club merchandise sales can be combined under the same report with admissions.

There are about two dozen DOR offices in major cities throughout Florida. If your club is planning a shell show or other event, contact the office in your area for assistance in complying with the regulations. You may also contact the Taxpayer Assistance Section at 5050 W. Tennessee St. Bldg. I, Tallahassee FL 32399-0100, (904) 488-6800 or 1-800-226-3411 (nationwide).

Non-Florida dealers planning to participate in Florida events should be informed of these regulations and advised to obtain the necessary forms. Those clubs in other states who are planning shell shows should check with their state office for up-to-date information in their area.

HAPPY HOLIDAYS!
DORIS

NEW ADDRESS FOR BACK ISSUES:

Order back issues of American Conchologist from Hank Foglino, 4 Trent Court, Smithtown, NY 117. Be sure to make any checks payable to COA and not to Hank.

Want to keep up on all the plans for the wonderful 1993 COA Edgewater Beach Convention...? Join the Gulf Coast Shell Club and receive their monthly newsletter, *Shell and Tell*. Editor Jim Brunner (also Convention Co-Chair, along with his wife, Linda) is running a regular column, "Convention Corner," to keep members up-to-date on their plans for a fabulous 1993 convention. Write P.O. box 8188, Southport, FL 32409.

TOM WRITES AGAIN

A **Directory of Conchologists/Malacologists**, compiled by Tom Rice, will be published early in 1993, containing the names and addresses of amateurs and professionals, collectors and researchers, who are interested in mollusks. Cost of the publication will be \$10.95 plus postage, but a pre-publication price of \$8.95 plus \$1.25 postage (total \$10.20) is good until Dec. 31, 1992. Order yours from Tom at OF SEA AND SHORE, P.O. Box 219, Port Gamble, WA 98364.

The 17th edition of **A Sheller's Directory of Clubs, Books, Periodicals and Dealers 1993-94** is also in the works. Tom was sending out inquiries to clubs and organizations in October, so the newest edition of this invaluable little reference will soon be a reality.

We all owe Tom Rice a real debt of gratitude for all he does to enrich and enable our hobby — from the old favorite, **Of Sea and Shore Magazine**, to his shelling tours. A while back, he even took over those fabulous old Jean Cate Shellecures on which many of us cut our shell teeth. We wonder if he is still shepherding Jean's slides around to the clubs.

Don't want to miss the next issue of
AMERICAN CONCHOLOGIST?

Use the handy gold form
that was in your last issue (September)
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Miami Island: A Voyage To The Eastern Archipelago

by Edward J. Petuch, Ph.D.

Whenever I drive along the Florida Turnpike in Broward and Dade Counties, just west of the great megalopolis of Fort Lauderdale-Miami, I always marvel at the seemingly-endless expanse of human development. Giant suburban housing projects extend to the horizon, fast-food restaurants and countless small businesses line streets gridlocked with traffic, and high-rise apartments and condominiums project above a miasma of automobile and aircraft fumes. From the high bridges of the turnpike overpasses, this man-made world, punctuated with scattered palms and Norfolk Island Pines, takes on a diminutive, Lilliputian appearance — underscoring its insignificance in the scheme of our Earth's history. It is hard to imagine that, just ten to twenty meters below the frenetic, high-speed turnpike traffic, the remnants of a completely different type of world lie buried.

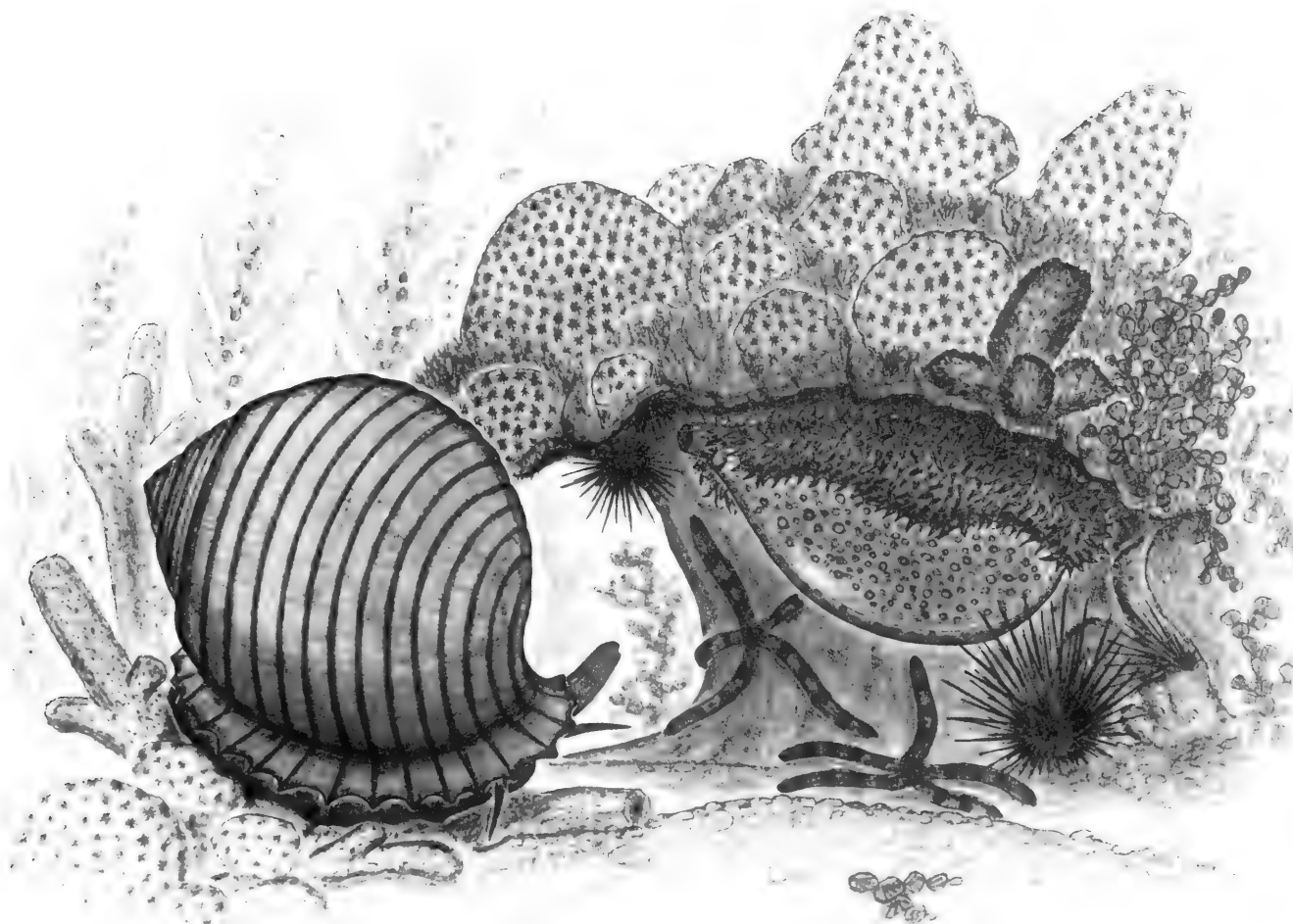
To while away time while caught in traffic jams, I often try to imagine what type of world might have existed in the Fort Lauderdale-Miami area during the middle Pleistocene. Several years ago, I discovered a direct link to this ancient time in a series of quarries just west of the turnpike in

northeastern Dade County. These remarkable collecting sites, about midway between the Fort Lauderdale suburb of Hollywood and the Miami suburb of Hialeah, are excavated in an area that extends for at least ten kilometers into the Everglades Basin. Fortuitously, the alignment of these borrow pits produces an east-west transect across the buried Pleistocene landscape. From these windows into the past, I receive a vision of Florida so completely different from what I see from the turnpike overpasses — a pristine Florida filled with bizarre, other-

(Continued on page 4)

"Miami Island: A Voyage to the Eastern Archipelago" is Chapter 2 of Dr. Petuch's just-issued book, *The Edge of the Fossil Sea*. The softcover book, illustrated with Dr. Petuch's own lively drawings and photographs and with an introduction by Dr. R. Tucker Abbott, is published by the Bailey-Mathews Shell Museum, P.O. Box 1580, Sanibel, Florida 33957. The \$14.95 book (+ \$2.00 mailing — museum members get a 10% discount) is a layman's geological history of the Florida peninsula and the famous Bermont Formation from the Miocene to the Pleistocene.

*Department of Geology, Florida Atlantic University, Boca Raton, Florida 33431.



Typical scene on the Capeletti Reefs of Miami Island. A large specimen of Petit's Grinning Tun (*Malea petiti* Petuch) (left) lumbers over a pile of broken coral fragments. A Spengler's Cowrie (*Cypraea spengleri* Petuch) hides under a small ledge (right), partially extending its shaggy mantle. Hiding under the same ledge are several long-spined sea urchins (*Arabica*). The top

of the ledge is covered with a canopy of starlet corals (*Siderastrea*), small sponges (*Ircinia*), and the calcareous alga, *Halimeda*. The sediments in the foreground are made up entirely of dead *Halimeda* plates. A bed of the large branching finger coral (*Porites*) can be seen at far left, while a dense forest of the giant brown alga, *Sargassum*, with its berry-like floats, grows in the background.

worldly ecosystems and populated by some of the most amazing land and marine animals that have ever existed on our planet.

At twenty meters depth, below a thin surficial limestone layer (the Miami Formation), the quarries nearest the turnpike cut into only sand and beachworm shell fragments. These virtually unfossiliferous deeper sediments run in a thin band down the coasts of Palm Beach, Broward, and Dade Counties and represent the buried Eastern Archipelago. Interestingly enough, the buried islands have influenced modern road construction. Since the Florida Turnpike is also the main hurricane evacuation route for southeastern Florida, it was built on some of the highest ridges along the coast. These ridges and high areas, in turn, correspond to the buried island tract, so the turnpike delineates the axes of the elongated Pleistocene coastal islands. Of the Eastern Archipelago, Miami Island was the largest and best-developed structure. Today, much of western metropolitan Miami sits upon this sediment-shrouded insular world.

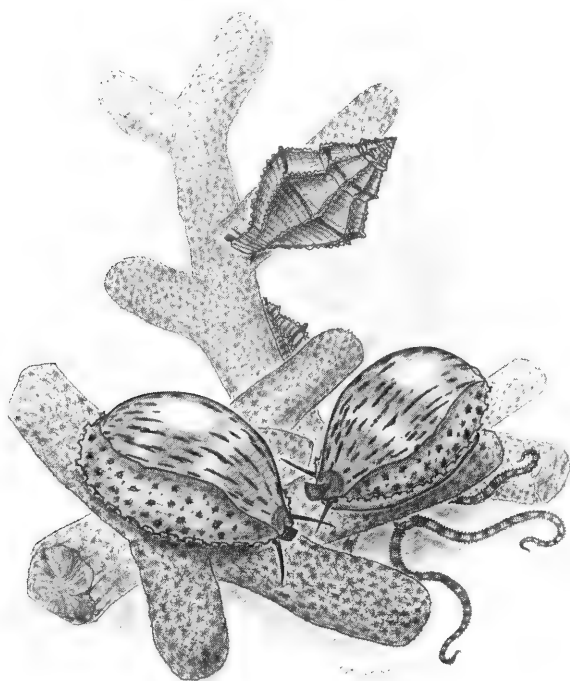
As inferred from the deep sediments and rocks found in the turnpike quarries, Miami Island was dry and scrubby, probably covered with tough grasses and palmettos. The Palm Beach Islands to the north were similar but smaller. During Aftonian time, Miami Island and the whole Eastern Archipelago were home to a wide variety of land animals. Along the quiet western shores of the islands, along the Okeechobean Sea, large herds of several types of elephants roamed the marsh areas. Two of these included the Curled-Tusked Gomphothere (*Cuvieronius*) and the American Mastodon (*Mammut*). The Eastern Archipelago was also home to the giant Terror Bird, *Phorusrhacus*, the last species of which lived on into the Pleistocene only in Florida. It is easy to imagine this giant predator, with some specimens standing over two and a half meters tall, skulking along the shoreline of the Okeechobean Sea in search of victims.

A few kilometers west of the turnpike in Dade County, the borrow pits have been dug into fantastically rich beds of shallow marine Bermont fossils. These beds were deposited along the western edge of Miami Island and are composed primarily of dense accumulations of perfectly pre-

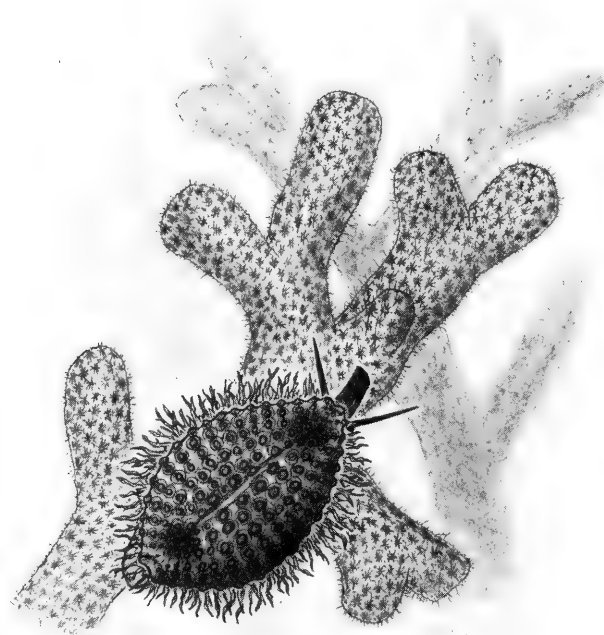
served reef corals and reef-associated mollusks. In the shallow, quiet waters of the eastern edge of the Okeechobean Sea, the coral communities were dominated by large massive types such as star corals (*Montastrea*, *Solenastrea*, and *Siderastrea*) and brain corals (*Diploria*), and by dense forests of finger corals (*Porites*) and the branching eye corals (*Oculina* and *Arcohelix*). These communities were not true coral reefs, as in the sense of the Great Barrier Reefs of Belize and Queensland, but were bioherms, random assemblages of massive coral heads, sponges, and "reef-building" bivalves such as oysters. The coral gardens of western Miami Island were also home to literally hundreds of species of shells, including some of the most beautiful and exotic-appearing that have ever been collected from fossil beds in the United States.

The best locality for collecting the shells of the Okeechobean coast of Miami Island was found in the westernmost quarry of a series of borrow pits owned by the Capeletti brothers of Hialeah. This large pit, approximately five kilometers west of the Florida Turnpike in northeastern Dade County, is situated directly above the western shore of Miami Island and cuts into a particularly lush and well-developed system of Bermont coral bioherms. I have named these magnificent buried coral-line structures the "Capeletti Reefs," in honor of the Capeletti family. During the middle Pleistocene, the Capeletti Reefs must have been exquisitely beautiful, with tiers of multicolored heads of star and brain corals descending down the steep slope of the adjacent Loxahatchee Trough. This cascade of massive coral heads would have been festooned with forests of purple and yellow sea plumes and sea whip gorgonians and large tube and vase sponges.

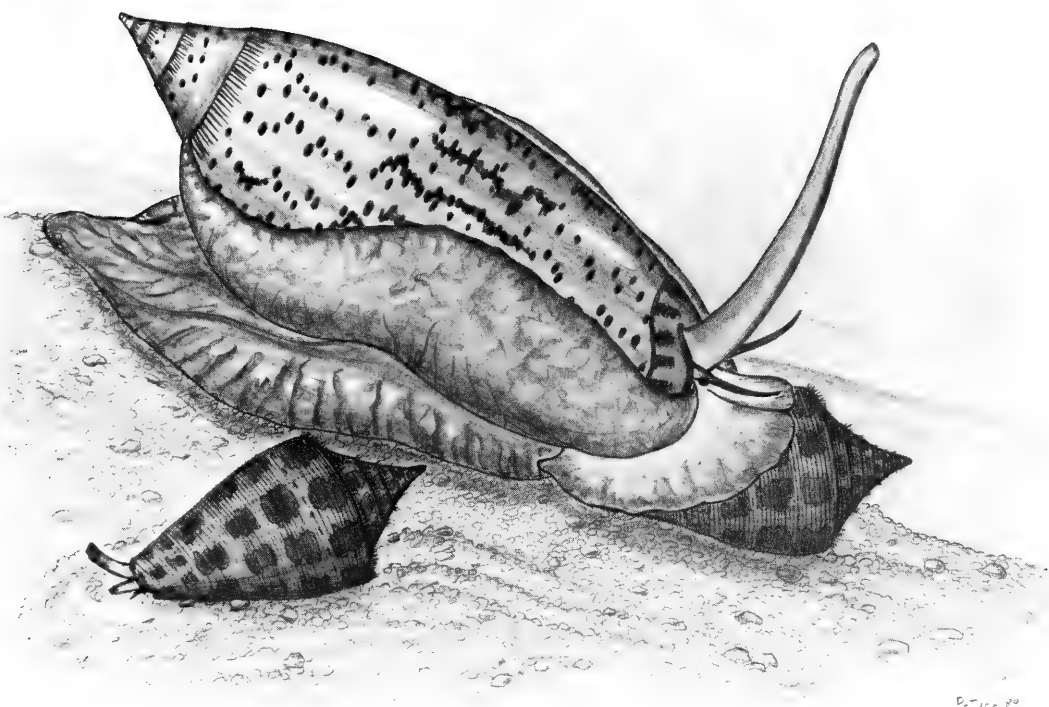
Living beneath the massive corals, the large Petit's Grinning Tun and the giant spotted Spengler's Cowrie would have been prominent Capeletti bioherm mollusks. Petit's Grinning Tun was the last of its kind to survive in the western Atlantic region. Although grinning tuns had been common in both the western Atlantic and eastern Pacific Oceans for millions of years before the Pleistocene, they were reduced to one lonely



Scene from within a finger coral (*Porites*) forest on the Capeletti Reefs. Two Catia Cowries (*Cypraea catiana*) Weisbord, with their mantles partially retracted, crawl over dead *Porites* branches in the foreground. A frilly Griffin's Murex (*Vokesinotus griffini* Petuch) climbs on an upright coral branch, while another Griffin's Murex takes shelter behind the pile of dead coral fragments. In the lower right corner, a banded snakeskin brittle star (*Ophioderma*) slinks into the shadows.



A Loxahatchee Pustuled Cowrie (*Jenneria loxahatchiensis* M. Smith) crawling on living finger coral (*Porites*) on the Capeletti Reefs. The cowrie's shaggy and frilly mantle is retracted, exposing the beaded surface of the shell. The Loxahatchee Pustuled Cowries fed on the living *Porites*, grazing on the polyp tissues like tiny carnivorous cows.



The giant Spengler's Olive Shell (*Lindoliva spengleri* Petuch) attacks an Everglades Cone Shell (*Conus evergladesensis* Petuch) on the slope of the Loxahatchee Trough. The cone shell will be enveloped by the olive's voluminous foot, smothered in mucus, and then rasped from its shell, piecemeal, by the olive's flexible, tooth-filled proboscis. The victim's mate escapes in left foreground.

survivor (*Malea noronhensis* Kempf and Matthews) living in northeast Brazil. Another closely-related species, *Malea ringens* (Swainson) is still living at the present day along the Pacific coasts of Central and South America. Spengler's Cowrie is the largest of the known fossil cowries of the southeastern United States, reaching a length of 125 mm (5 inches), and is closely related to the modern Deer Cowrie (*Cypraea cervus* Linnaeus) which is commonly collected on reefs and rocky areas in the Gulf of Mexico, Florida Keys, and the southeastern United States. Spengler's Cowrie is the direct ancestor of the Deer Cowrie and has only been collected in the Bermont Formation of the Aftonian Okeechobean Sea.

Within the coral rubble and under slabs of dead coral, a whole microcosm of small shells was present on the Capeletti Reefs. If it were possible to go back in time and go skin diving along the western coast of Miami Island, the modern shell collector would be dazzled by the diversity and abundance of the smaller Bermont species found under each piece of loose coral. Hiding under an average-sized slab would have been the brightly-marked and spotted Miccosukee Dove-Shell and the Florida Woodlouse, and the frilly, ornately-sculptured Griffin's Murex. Also found together with these smaller cryptic species were larger forms, such as Maxwell's Latirus and the Bermont Latirus, and the beautifully-ribbed Krebs Hairy Triton.

In sand pockets between the rubble piles and live coral heads, the Giant Atlantic Cerith shell would be found partially buried, coming out at night to feed on algal films. Although abundant as a fossil in the Capeletti pit and at other Okeechobean reef localities, the Giant Atlantic Cerith became extinct in Florida at the end of the middle Pleistocene. Interestingly enough this beautifully beaded cerith shell has recently been collected alive on reefs along a few islands off the Caribbean coast of Honduras. The Giant Atlantic Ceriths of Honduras, then, represent true "living fossils." Also living on the reef surface were large clusters of Rose's Slipper Shell with some stacking up in large piles: males at the top, females at the bottom. The dense forests of sea plumes and sea whips which grew from the reef surface were also home to a variety of Flamingo Tongue shells. These beautiful cowrie-type shells, with their gaudily-patterned animals, would have been seen grazing, probably by the thousands, on the living tissues of the sea whips and other gorgonians.

One of the most beautiful areas on the Capeletti Reefs was the Finger Coral (*Porites*) beds, which often formed densely-interconnected thickets that covered large areas of sea bottom. In the Capeletti pit, *Porites*

corals are dredged up in huge masses, often completely covering the outer surfaces of ten-meter high piles of reef sediments. It is within these immense accumulations of finger corals that I find some of the rarest and most beautiful fossil reef-dwelling shells. The small but exquisite Catia Cowry and the tiny speckled Portell's Cowrie lived within the tangles of interlocking live and dead *Porites* branches, and were characteristic of this cryptic, intracoralline world. The Catia Cowrie was originally described from the early Pleistocene of Venezuela, and represents a "foreign," Caribbean element in an otherwise highly localized, endemic Okeechobean fauna. Probably the most spectacular inhabitant of the *Porites* thickets was the Loxahatchee Pustuled Cowrie, a small relative of the large egg shells (family Ovulidae) of the Recent southwest Pacific. Like its giant modern relatives, this beautifully beaded cowrie shell fed upon the living coral polyps and would have been seen grazing on the exposed finger coral branches. Although the Pustuled Cowries are now extinct in the Atlantic Ocean, a single small species survives along the western coast of Central and South America. As in the case of Petit's Grinning Tun, the Loxahatchee Pustuled Cowrie was one of the last of its kind to survive in the Atlantic Ocean, having found a refuge in the Okeechobean Sea.

While the giant Terror Birds (*Phorusrhacus*) stalked their prey along the shores of Miami Island, another predatory terror attacked its victims on the nearby Capeletti Reefs. Evidence of these powerful reef predators is abundant within the masses of fossil corals. Here are found large numbers of crab claws belonging to several mollusk-eating species. The largest and commonest type of claw is that of the Stone Crab (*Menippe*). These voracious predators seemed to have a special craving for the Giant Ceriths, as over ninety percent of the ceriths collected have their lips broken away in a characteristic crab-predation fashion. I like to imagine the giant Stone Crabs sitting among the corals and holding a cerith in their small claw, while they used their large claw, like tin snips, to break back the shell lip. The exposed, unprotected mollusk was then greedily devoured, head- and foot-first, and the empty and fractured shells discarded. These cast-off, broken cerith shells hold a special fascination for me, particularly when I sit in turnpike traffic jams and contemplate the large numbers of empty styrofoam cheeseburger and other fast food containers blowing along the roadside. At times like this, the juxtaposition of the two ecological interactions, crab-cerith and man-cheeseburger, separated by eight hundred thousand years, takes on an almost metaphysical quality!

WHENCE SOUTH FLORIDA'S PLIO-PLEISTOCENE SHELL BEDS? (AND WHY DOES IT MATTER?)

by Warren D. Allmon

Just as no one's baby pictures are ugly to his mother, so no fossil deposit is trivial or average to the paleontologist who spends days or weeks or years collecting from it, studying it, trying to reconstruct the conditions of its formation. But while the history of the earth is long, the days of a paleontologist, even all paleontologists added together, are short. While we may get pure personal pleasure and satisfaction from the activity of collecting and studying any fossil, limitations of time and resources compel us to choose which fossils and which fossiliferous deposits to study. We cannot examine them all. We must therefore select those that we believe will reveal to us the most about those aspects of earth's history we most wish to understand.

The southern portion of the Florida Peninsula is in many ways a poor place to practice geology. The lack of topography robs the aspiring geologist of the exposures that elsewhere come from road cuts, river banks, and rock slides. The area is, furthermore, geologically very young and relatively quiet. No sediments older than about 15 million years are known south of the latitude of southern Tampa Bay, and there has been little if any seismic activity during that time. But what this region lacks in conventional criteria of geological interest it more than makes up for in fossil content, for southern Florida ("South Florida," in local parlance) contains some of the most striking fossil beds known anywhere in the world.

*Paleontological Research Institution, 1259 Trumansburg Road, Ithaca, NY 14850



Quarry wall in the APAC pit near Sarasota, Florida, showing the densely packed shell beds of the Pinecrest Sand.

These beds, dating from the Pliocene and Pleistocene epochs of the Cenozoic era (i.e., the last 5 million years), have been known to collectors since at least the late nineteenth century as rich sources of beautifully preserved mollusks and corals. They contain hundreds if not thousands of species, often densely packed in accumulations up to fifty feet thick. One unit in particular, the "Pinecrest Sand," best exposed in quarries near Sarasota, is famous for its abundant and diverse fossils. Yet despite their showiness, we actually know incredibly little about these fossil beds. There are no comprehensive taxonomic monographs, as there are for less spectacular faunas elsewhere in the geological record, so we do not know how many species they contain; detailed studies of their modes and environments of deposition are also few, so we lack an understanding of their geological as well as their biological origins.

After working in these beds for more than four years, I believe I know why they have been neglected. Not coincidentally, the answer may also be the answer to why we need to know about these particular beds. We are profoundly ignorant of most fossil deposits from most places and time intervals; from among all these, the Plio-Pleistocene shell beds of southern Florida, however, are definitely worthy of our attention.

To oversimplify considerably, the most basic question about these shell beds is: Why are they so dense? Why were so many shells preserved in this place at this time? Following closely behind must surely be the question of diversity: Why do these beds contain the numbers of species that they do? As it turns out, these questions are probably related, and they appear to be answerable only through a consideration of the overall environmental and oceanographic history of this part of the world over the last three to four million years. Since we are only now beginning to understand this history, we are only now in a position to understand its effects on the organisms that lived here. In turn, it appears to be the case that we cannot understand the biological history of this part of the world (the subtropical Western Atlantic) without understanding what happened in Florida. In short, we have neglected Florida's shell beds because they were never anything more than an incredible abundance of pretty shells. We needed a better reason to study them, and now we have one.

FORMATION OF SHELL BEDS

Fossil concentrations (= "shell beds") result from three kinds of factors: biological, sedimentological, and diagenetic (i.e., post-depositional alteration). In other words, highly fossiliferous sediments are formed by some combination of high densities of living organisms, physical accumulation of organisms or their body parts before or after death, and concentration of biogenetic hardparts after burial by compaction, selective dissolution, or other diagenetic processes. In seeking the origin of any shell bed, we may therefore break the search for causal factors into the search for biological, physical or sedimentological, and diagenetic factors. (In large part because of their youth, Florida's Plio-Pleistocene shell beds have probably been little affected by diagenesis, and we can therefore safely ignore it here.)

There is considerable evidence for physical reworking in some of these shell beds, including imbricated orientations of bivalves and surface abrasion, and for a more complex pattern of relatively rapid burial and subsequent sediment winnowing, including paucity of encrustation of shells (shells that sit unburied at the surface tend to get encrusted by other organisms), and the higher proportion of fine sediment within compared to outside articulated bivalve shells. It does not appear, however, that physical reworking can be completely responsible for these massive shell beds. In part this is because physical reworking is occurring today off the coast of Florida, yet such shell beds have not been found on the shelf. More importantly, there is considerable evidence that levels of biological productivity off the west coast of Florida were higher, at least in the late Pliocene, than they are in this area today. To understand why this apparent change may have taken place, it is necessary to examine the regional paleoenvironment of the last 3-4 million years in the Western Atlantic.

(Continued on page 8)



A layer of the bivalve *Anodontia alba*, most in life position, from the Pinecrest Sand exposed in a pit near Sarasota. These shells probably underwent minimal reworking compared to their original orientation and density.

A layer of the gastropod *Strombus floridanus* Mansfield, many encrusted with small red barnacles, from the APAC pit at Sarasota. This layer formed as a result of both high living density of snails and condensation of the deposit by the winnowing away of sediment by waves or storms.



A block of the gregarious gastropod *Vermicularia* sp. from the APAC pit at Sarasota, which was overturned (probably by a wave or storm) before being buried.

LATE CENOZOIC ENVIRONMENTAL HISTORY OF THE WESTERN ATLANTIC

The Pliocene (5—1.6 million years ago) was a time of profound change in world climates, of transition between the relatively infrequent and small climatic fluctuations of the earlier Cenozoic era to the more common and larger fluctuations of the Quaternary "ice age." In addition, the history of the Western Atlantic during this time is complicated by the final closing of the Central American Isthmus (at around 3.0 million years ago), which separated the Pacific from the Caribbean and the Western Atlantic. Against this backdrop, the following were among the more important climatic events in the region (based on fossil and isotopic data from deep sea cores as well as on the coastal plains).

The area that is now the southeastern United States experienced a major warming trend between 3.5 and 3.0 million years ago. During this time, however, many areas along the coastal plain experienced somewhat lower surface water temperatures, probably due to the upwelling of cooler, more nutrient-rich water from farther offshore. (Upwelling, caused by a number of processes including winds and current patterns, is an important process in many areas of the modern ocean, and is responsible for, among other phenomena, the world's most productive fisheries.) Major continental glaciation in the northern hemisphere appears to have begun around 2.4 million years ago. During this time, however, it appears that little if any significant cooling took place along the southeastern U.S. coast.

The largest change in the region during this time may have been a major decrease in the incidence of upwelling. The evidence for this claim is still largely circumstantial, but it is persuasive. During the late Pliocene, when the spectacular "Pinecrest" shell beds of southern Florida were being deposited, upwelling was probably common, at least on the west coast of Florida and probably elsewhere. This is indicated by 1) the lack of calcareous algae, usually indicative of warm waters, in the Pinecrest sediments, 2) the presence of "cool water" mollusks mixed in with more typically "tropical" forms, 3) the local abundance of mollusks (e.g., turritellid gastropods) that prefer cool, high-nutrient conditions today, and 4) the presence of a coral fauna poor in clear- and warm-water-loving forms and rich in forms preferring turbid and cooler waters. Data from deep sea cores elsewhere in the Caribbean basin similarly suggest that upwelling may have been common across the area at this time.

After closure of the Isthmus, conditions appear to change. Temperature apparently did not change, at least at these low latitudes, but upwelling may have. Among the supporting evidence: the nutrient-loving turritellids show a dramatic decrease in diversity in the Western Atlantic, and marine microfossils show sudden changes consistent with a more erratic nutrient supply. In ways that we still do not understand, this change may have been caused by the changes in oceanic circulation that accompanied the Isthmian closure.

CHANGES IN THE MOLLUSK FAUNA

Whatever happened in the marine environment between 3.0 and 2.0 million years ago, significant changes took place in the molluscan faunas. Although it was originally believed that total diversity (i.e., total number of species) declined during this time in the region, this no longer seems to be the case. What appears to have occurred instead was one, and probably several, episodes of increased rate of both extinction and origination of mollusk species. Many species did disappear, but total diversity remained approximately the same. (Local, or "alpha," diversity

— the number of species that actually lived together in one place at one time — may have declined, but this remains to be confirmed.)

What caused these changes? And what do these changes have to do with the density of Florida's Plio-Pleistocene shell beds?

If high biological productivity, perhaps caused by upwelling of nutrient-rich water, was responsible for the incredible density of shells we see in the late Pliocene (before both the Isthmus closed and the extinctions occurred), then the disappearance of upwelling (if this indeed happened) cannot alone be the explanation for the extinctions, because post-Isthmian, post-extinction deposits, at least in Florida (e.g., the famous Caloosahatchee beds), are just as densely fossiliferous. The more likely scenario is probably more complicated: Florida's Plio-Pleistocene shell beds formed as a result of both physical accumulation and high biological productivity. There is strong evidence for both phenomena and neither can be excluded as having played a major role. When the Isthmus closed, changes in oceanic circulation occurred in the Western Atlantic (as, among other things, previously westward-flowing currents were diverted northward) and previously well-established patterns of upwelling were disrupted. (This change may have taken time to become complete, and upwelling may have continued to play an important role in shell bed formation into the Pleistocene, possibly accounting for shelliness of, e.g., the Caloosahatchee and other units.) This disruption may have increased rates of extinction of established mollusk species (perhaps by disrupting food supplies), but it also may have increased rates of speciation. The latter could have occurred when formerly widespread populations became stressed and fragmented by deteriorating nutrient supplies. As sub-populations became isolated, some diverged to become new species. Total diversity remained approximately the same, even while many species disappeared (and perhaps local diversity declined).

Philosopher Alfred North Whitehead once issued advice that could be taken as an almost universal part of the scientific method: "Seek simplicity," he wrote, "but distrust it." As scientists, we constantly seek single, unifying answers to multiple, often disparate problems. Yet we must beware of forcing solutions that appeal to this sense of simplicity, but do not fit the data adequately. The problems of the evolution of species and biological communities and of the formation of fossil assemblages are often viewed and studied in isolation from each other, as having separate solutions. The problems of understanding the biological and geological history of Florida's Plio-Pleistocene shell beds at first appear incredibly complex, and they in fact may turn out to be. Yet because at least one variable — biological productivity — has potentially important roles in both the evolutionary ecology of organisms and the formation of fossil assemblages, it may offer a useful and illuminating link between fields, a stimulation for further work, and a unifying idea as we continue to look with wonder at these spectacular fossil deposits.

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CONSERVATION FOR CONCHOLOGISTS

The little word picture here appeared in Dredgings, newsletter of the Pacific Northwest Shell Club, Dale Lent, Editor. It's bumper sticker graphics, to be sure,

but it says it all in a nutshell. Some artistic shell collector ought to try designing one with a snail.



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WHAT IS IT???

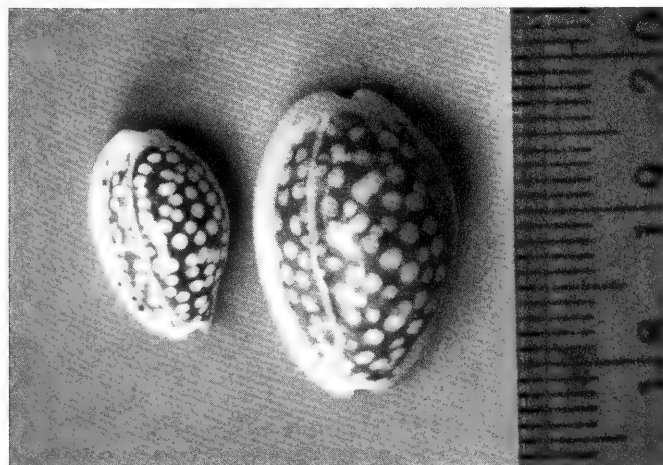
Well, here we are again. At least we know you have shells out there that you can't identify. But nobody's written a word to us about the identities of the Barbados *Engina* species or the little Bahamian *ceriths* pictured in last issue's "WHAT IS IT???" column. Can it be that there are still unnamed Caribbean shells out there?



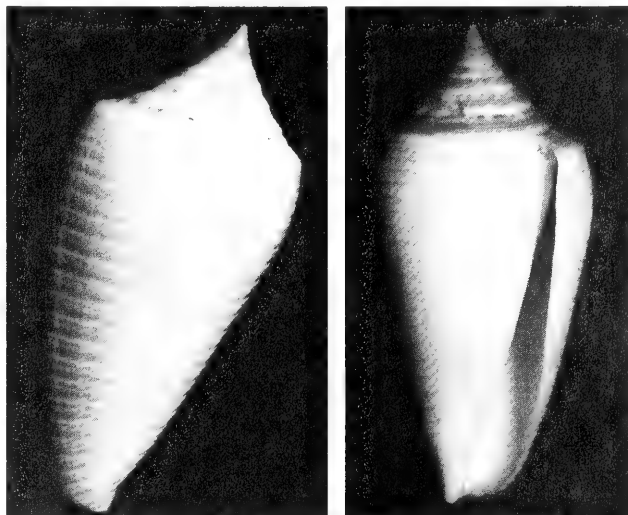
"The call for photos of unidentified shells in our collections [Am.Conch. 20(2): 8, June 1992] got me to thinking of numerous puzzling non-marine species that I have yet to categorize," writes Richard Goldberg. "For the most part, these puzzlers are small or microscopic. One, though, is a large, showy shell that has baffled me for some time. It is a large *Ariophantidae* species, with a thin shell, perforate umbilicus, and a thin, unexpanded peristome. The shell is 41-50mm in diameter, 28-33mm in height, densely striate, with a glossy pale- to forest-green periostracum with dark green streaks; underneath the shell is pure white, with a dark bluish-black nuclear whorl.

It comes from south Sulawesi, Indonesia on coffee plantations. It is associated with limestone outcroppings and vine thickets at relatively high elevations. I am not sure how widely this species is distributed, or, for that matter, whether it is an introduced species, to Sulawesi, or to Indonesia. A number of the more prominent Indonesian species tend to be endemic to particular islands.

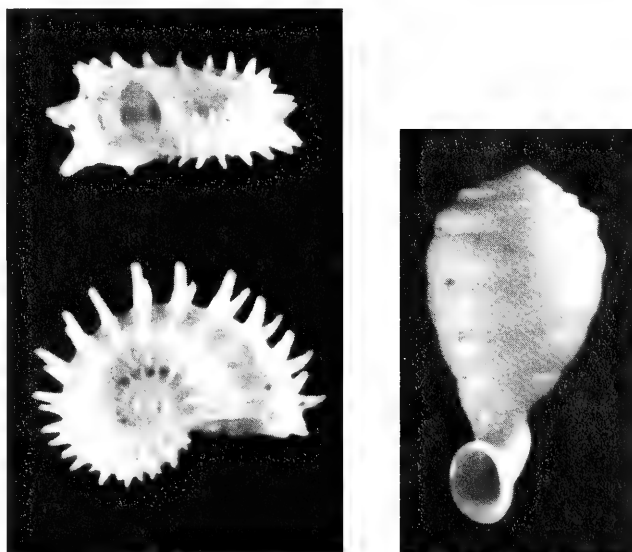
One might think that a large, showy and prominent species would be easy to locate in the literature, but such has not been the case. If you have an idea of what it might be, write our Editor and me."



From Brian Dy in the Philippines: "An unfamiliar find: The mollusk (left) was included in a batch of mixed ordinary cowries, and according to a reliable source they come from the Bicol region, Philippines. Except for its pale color, this specimen looks just like a bona-fide *Cypraea catholicorum* (right) which is from Vanuatu, Micronesia. Not known to be a denizen in this part of the Indo-Pacific, if it is indeed a *C. catholicorum*, it's probably spread from its original habitat a distance further. Otherwise, it may simply be another oftentimes variable *C. cribraria* at its 'pseudo' best!"



From Vernon K. Cothran, stationed in the Pacific: "Enclosed are some photos of a [63mm] *Conus* species which I obtained from an Okinawan shell dealer during 1991. I don't have any specific collection data. However, it was with other Indo-Pacific cones. I'm inclined to believe that this specimen came from the East China Sea or from the Philippines [because] this dealer in Naha, Okinawa obtains shells from local Okinawan divers and purchases bulk shipments from the Philippines. The data sheet attached was written in Japanese, translating to 'White Shell.' All corresponding shells it was with were deep water specimens."



Photos by Kevan Sutherland

From Dieter Cosman in Ft. Lauderdale: Both of these shells were taken from a cave at the Bay of Pigs, Cuba. The strangely shaped land shell is 24mm and was found near the mouth of the cave, just 20 feet inside the entrance. The shell that resembles a spiny *Cyclostrema cancellatum* Marryat, 1818 is 12 mm. and was taken from 120' of water in a sort of blue hole in the cave. Both shells were collected by Jeffrey Bazanic and are in my collection.

SHELL GRADING NOTES

by Bob Purtymun

I remember well the heated discussions that occurred after the Shell Grading Standards were first suggested in Hawaiian Shell News in the 1973 March issue, because I was on the board of directors then. Some of the board members were even opposed to getting involved.

However, a quote from that March issue still sticks in my mind. "Truly, one man's jewels may be another man's junk!" I have in my collection a *Conus floccatus* Sowerby, 1839 that was collected on the Taema Bank, Tutuila Island, American Samoa, in pieces. Later I glued that shell back together.

One night I was diving on Wheeler Reef, a part of the southern end of the Great Barrier Reef in Australia, when I spotted a gem *Conus aureus* Bruguiere, 1792. Not so! When I turned it over I found that the interior whorls and the animal were gone and the lip was chipped.



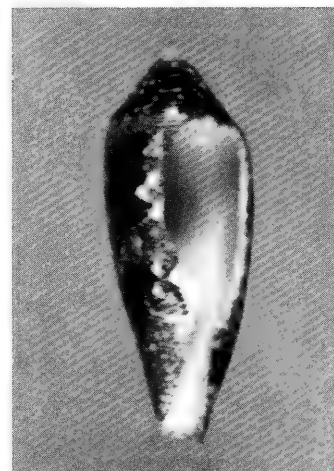
Conus floccatus Sowerby, 1839



Conus bullatus Linne, 1758



Conus aureus Bruguiere, 1792, dorsal and heartbreak views



CONCERNING ANDREW:

Hurricane Andrew devastated the homes and lives of so many in southern Florida that we may forget the impact it had on mollusks. The fate of land snails in devastated areas has probably not even occurred to most of us. But many of them, like *Liguus* and the endangered Stock Island Tree Snail, live in trees, which were stripped of their leaves by the force of the winds. Hot sun then beat in upon the unprotected snails, and cooked them in their shells. Large numbers of *Liguus* and Florida Tree Snails (*Orthalicus*) no doubt perished.

But there's good news: almost the entire population of rare Stock Island Tree Snails were living in Monkey Jungle, south of Miami, where biologists had relocated it 10 years ago in an effort to build up the snail's numbers. "Great!" you say, "That was square in the path of the storm!" True, but read on: Thomas C. Emmel of the U.S. Fish and Wildlife Service rescued 463 of the snails, along with several other species of tree snail, and took them to his lab in Gainesville, where something — the storm or the move or the change in diet — has stimulated a Stock Island Tree Snail baby boom. The hermaphroditic snails have been mating and laying eggs at a frantic rate ever since, and the population is receiving a much needed boost from this near-tragedy.

Just as wind roared through and removed or rearranged every twig and pebble and leaf on land, so the scouring action of the huge waves significantly altered the coastal areas. **Tom Honker** of Delray Beach writes:

"...we made some dives out here to survey the damage from Hurricane Andrew. A freighter lying in 80 ft. of water outside Boca Raton inlet was twisted and broken in half, with the midships all collapsed. Two of our best collecting spots near there were obliterated. Large spoil piles which had provided good habitat for desirable species such as *Conus granulatus* were scattered. These spoil areas which had been so productive in the past had a sand-blasted appearance. It may be a long time before shells will be found in these areas in any abundance as before. The reefs

Another shell in my collection is the *Conus bullatus* Linnaeus, 1758 that I collected from the "General Store," Kauai, Hawaii in 1980. It looks like someone shot it with a gun.

These shells probably have one thing in common. They all met their demise in the same manner. First, they were zapped by a *Conus marmoreus* Linnaeus, 1758 or a *C. textile* Linnaeus, 1758 and the animal was eaten. Then a hermit crab took over the shell and carried his new house out into the open where it was spotted by a shell cracking fish or eel.

Today, these shells reside on a little pad of cotton in a plastic box in one of the Cone trays in my collection. Not worth as much in dollars as my 64mm long gem+ *Conus floccatus* Sowerby, 1839 w/o and f/d, but they are still jewels to me.

in general off Palm Beach and Broward fared pretty well. A lot of coral heads that were lying unattached on the bottom had been shifted, in some cases into gullies where they may not survive. Some had been overturned, but local divers have been righting them and cementing them to the reef.

"One thing though — I have hopes that *Spondylus americanus* will become more plentiful now that the bottom seaward of the reef has been cleaned and there is fresh clean surface for the spat to attach to. The bottom off Boynton Beach in 130-140' is nice and clean, having been well-scoured by the huge waves, so I think there might be some nice shells growing there in a few years. Two to three years should be about right. So I may be back in the *Spondylus* business in a few years. I used to handle hundreds of these beautiful shells."

And what of the Bahamas? We read in **Dredgings** (Nov-Dec), newsletter of the Pacific Northwest Shell Club, **Shary Almasi's** and **Trevor Roberts's** account of their shelling cruise with **Pat** and **Dick Bingham** through the Bahamas, beginning just twelve days after Andrew's rampage. Grand Bahama sustained some damage, as did Petit Cay, and there was some silting, but shelling was still good. Devil's Cay shelling was excellent. But Cabbage Cay was devastated. All inhabitants lost their homes, Australian Pines and palms were all uprooted or broken, "dead chickens in the water, metal sections of roofs and walls in the water where we snorkel." One island dweller who was very heavy held 8 small children under him in the storm. Silting was extensive and shelling poor.

Bond Cay and Cat Cay were in bad shape too, but shelling was good there. They didn't see one of the huge private homes on Cat Cay intact. Bimini was already pretty well cleaned up by the U.S. Coast Guard when their group arrived, but they were told that there had been two to three feet of water in all the shops and a shark swimming up Main Street.

Andrew may be out of the news now that the National Guard has departed, but it will be years before the scars from this Storm of Storms are gone.

With the Florida Shell Season about to begin, some advice on exhibiting seems in order. Here we reprint two articles from club newsletters in early 1991 which contain valuable advice for all exhibitors.

ON SHELL SHOW EXHIBITS

by Emilio Garcia

The following tips from well-known shell show judge and collector of Caribbean shells, Emilio Garcia, are timely aids to preparing that winning shell show exhibit.

As the hobby of shell collecting has changed through the years, so has the character of exhibits in shell shows. It used to be that all the collector wanted to do was to collect; and his shell exhibit was a reflection of the exhibitor's philosophy, showing a number of labeled specimens that told the viewers only: "We were collected (or bought) and here we are."

Nowadays, things have changed. The collector not only wants to acquire specimens, but he is keenly interested in live mollusks, molluscan ecosystems, geographic distribution of a species, problematic complexes, etc. This "more scientific" approach seems to be the result of the lamentably fewer number of professional taxonomists we have today, as well as the hurried approach by some in describing "new" species to the detriment of their credibility. Amateur collectors, therefore, have been forced to pay closer attention to the scientific aspects of this hobby, and this shows in their exhibits.

There is no question in my mind that the number one objective in preparing an exhibit is to learn from the experience, and by learning, to teach—not only in the educational category, but in most others. I don't mean at all that there should be lengthy, complicated texts accompanying the exhibit. Drawings, maps, simple charts, molded versions of mollusks (if applicable), etc. are much more effective than lengthy texts which most people won't read. The message one is trying to convey, hopefully synthesized in the title, should be understood by looking at the main portion of the exhibit (i.e., specimens and head prints), and the supporting material should only serve as a guide to a better comprehension, not to the expansion of it. That is why it is so important to decide what the purpose of the exhibit will be; and it certainly should be other than "Look what I picked up at the beach," or "look how much money I have. I can buy five of these rare shells." Not that there is anything wrong with the shells one picked up at the beach, but show that your exhibit has another purpose (i.e., "Bivalves of Tampa Bay" or "Sandy Bottom Mollusks of the St. Petersburg Area"). There is absolutely nothing wrong with having lots of money and spending it on shells. Who doesn't want to see beautiful, rare, expensive species? Besides, I am sure many of these are on the market only because it was worth it for some poor fishermen to keep them. But...what is the purpose of the exhibit? Why do you have four *Austroharpa exquisita* in your *Harpa* exhibit when they are all exactly alike? And they are all showing their dorsal side.

There should always be a purpose to every specimen in an exhibit, and choosing the right species (or specimen) can make it or break it. Since putting an exhibit together requires research, think small! Remember, for example, that just because you bought a specimen identified as such and such, that does not mean that it is necessarily that species! You need to curate your specimens carefully. Why have an exhibit on the Conidae (unless you have a fabulous, well-curated collection and a nice research library), when you could work with a particular cone complex or a geographic area or a certain habitat or a combination of the above, and do a better, more comprehensive study of the subject?

Finally, don't gild the lily. Be simply elegant. If what you do does not enhance the specimens or clarify the meaning of your exhibit, it will surely detract from it.

—from *Suncoast Shorelines*, publication of the Suncoast Conchologists, Jan-Feb 1991.

ANATOMY OF AN EXHIBIT

by Ed Sarkin

The late Ed Sarkin was an exhibitor par excellence and his absence will be keenly felt during the upcoming Florida shell show season. He knew well how to put together a winning exhibit, and he wrote the following article based on his own experience at the game. Even other winning exhibitors may profit from Ed's philosophies and tips for beginners. Ed and his wife Kathy entered six shows that winter of 1991 and won the COA, the DuPont, four Shells of the Show, and any number of Club trophies, judges ribbons, and awards.

Putting together a shell exhibit is a learning experience and a lot of fun at the same time! I have exhibited for over twelve years and have seen a big change in my own exhibits, as far as content and format are concerned. This article is geared toward the first-time exhibitor who may be apprehensive when putting together a first exhibit.

First and foremost, don't be disappointed if right away you do not win ribbons and trophies. Everyone wants to win, and this will come in time. It took me four years of exhibiting and asking questions and carefully reviewing the top exhibits as to why they won the blue ribbons and major trophies. Eventually, my exhibits started winning these awards. When you display your exhibit, no matter what the size, you contribute to the shell show and are part of the activities and fun!

The following are some of my thoughts and ideas as to what it takes to produce an all-around exhibit, something you as an exhibitor and others can learn from:

- A. **Give yourself plenty of time.** Some exhibits may require six months to a year of research, especially if you are doing an educational exhibit. Don't wait till the last minute.
- B. **Decide on a format,** i.e., educational exhibit, general exhibit (exhibits showing families, a genus, etc., without a lot of additional written information).
- C. **Think about layout.** How many cases will it take, what will be used for graphics, i.e., backboards, pictures, models, maps, charts, and written material? **Keep it neat.** I believe a certain amount of graphic work is required for any exhibit and a big word to remember is "Neatness." **Keep written material to a minimum.** If your paragraphs get too long, try splitting them up into smaller ones. It makes it easier for everyone to read. **Stay away from too many pictures.** Your exhibit is in your cases, not on backboards.
- D. **Select specimens.** Try to select your best specimens as far as size and color are concerned. Condition of specimens is important for overall appearance.
- E. **Layout of specimens.** I use a piece of cardboard the size of my case to lay out the shells that will be in that case. This way I can balance the layout of the case without use of the actual case. **Don't overcrowd.** Less is best.
- F. **Bottom cover of case is next.** Try to pick a color that is pleasing to the eye and will enhance the color of your shells. Stay away from velvets and materials that attract lint. It's a time-consuming job removing lint from cases!
- G. **The "dreaded" label is next,** once you have decided on what specimens you are going to use. No matter how much information and how accurate it is, there is nothing that bugs me more than to see a label that is curled at both ends. Over the years I have developed a method of making labels that puts an end to curls. A lot of people are using my method; it works!

1. First the labels are typed on paper that is color coordinated with my color scheme (not necessarily white).
2. Next, spray glue the back of the typed sheet and attach it to a manilla folder half. That gives the label rigidity and keeps the label from curling when cut.
3. Then I carefully trace a border around each label using a flat brass rod 1/4" wide. (The rod can be purchased at any hobby shop.) After each label is outlined, they are cut out by using a paper cutter. Unless you are a surgeon by profession, a paper cutter is highly recommended! After all my labels are cut out, they then are individually spray glued to a piece of color coordinated mat board. I next trace a 1/8" line around each label and cut out with a paper cutter. There is nothing better looking than a nice, neat label to enhance your exhibit. Remember that word "NEATNESS."

The whole idea of exhibiting is not just for the ribbons and the trophies, but also the fellowship you experience.

—from the April 1991 *Central Florida Shell News*

ON ALBINISM IN MOLLUSKS

by Emily H. Vokes

All of us are familiar with albinistic shells, those that lack all or almost all pigmentation and are either dead white or just touched with color. There seems to be an unusual number of these forms from Australian waters, but *Murex queenslandicus* Ponder and Vokes, 1988, from Swain Reefs, off Mackay, central Queensland, probably is the best known example in the Muricidae (Fig. 1). This is a common shell which began appearing in some numbers in the late 1960's and was called by every *Murex* name known to science (*M. coppingeri*, *M. tribulus*, *M. pecten*, etc.). The most unusual feature about the species is that all of the specimens from the Swain Reefs area are absolutely dead white. Specimens from off Townsville to the north and Yeppoon to the south are a more "normal" muricine tan.

Why should an albino population develop at this one locality? I don't know about Swain Reefs but I suspect that a situation occurs there that is similar to one which occurs in northwestern Australia, where I do know the reason.

This Western Australian locality is the home of an albino population of *Hexaplex stainforthi* (Reeve, 1843), normally an intensely-colored species (Fig. 2), ranging from tan with brown varices to all brown. This albino population has also been long known. I have specimens in my collection labeled "Cape Missierlassi, W. Australia," which go back to the 1960's.

The basic reason for an albino population developing anywhere seems fairly obvious when one thinks about it. Biologists love to cite the case of variation of color in some English moths that permitted the darker-colored varieties to survive better on the soot-darkened tree bark of coal-mining towns — a classic example of Darwinian Natural Selection in action.

There must be some situation in which a conspicuously white shell is not a handicap to the owner, and the obvious answer is — when the background is also conspicuously white. Suddenly, a dark shell sticks out like a sore thumb, or like an enticing morsel to a mollusk-eating predator.

In the case of the Western Australia colony, the area where the albino specimens come from is located toward the northern end of Eighty Mile Beach (NOT now known as 130 Kilometer Beach!), about 100 miles (160km) southwest of Broome, at Cape Missiessy (not "Missierlassi" as my old labels read). The nearest "civilization" is Anna Plains, a sheep station, which even makes the National Geographic World Atlas. If they didn't mark sheep or cattle stations in northern Australia the map would be blank indeed!

Eighty Mile Beach is just that — a blindingly white, beautiful sand beach that stretches for at least eighty miles (it is more like 130 miles) between Cape Keraudren and Cape Jaubert. But along with the sand is an extremely fine white sediment that causes the water to look like milk when seen from the air. I flew along the coast from Port Hedland to Broome and it is an incredible sight to observe this strange white liquid, which extends for some distance offshore before the water finally becomes a more normal green.

I have not collected at Anna Plains but was given the information about the occurrence of these albino shells, together with examples of the shells, by Joe Rinkens, a shell collector and dealer in Port Hedland. He has collected there many times and he tells me that the fine white sediment covers everything in the area. The least perturbation of the water causes a white cloud to appear, and until it settles out you can't see a thing.

Most of the beach is just sand and, as such, is not very mollusk-rich, but at Cape Missiessy there is an area of dead reef that supports a large number of these albino animals. And it is not just *Hexaplex stainforthi* (Fig. 3), although they are the most dramatic. It is every species. All shells are not absolutely white; Rinkens gave me examples of *Conus victoriae* (Reeve, 1843) (Figs. 4-6), which show the same paling of color. The specimen in Fig. 4 is a normal-colored example from Port Hedland; the

others are from Anna Plains. All specimens there are much lighter than the species usually is (Fig. 5) but even the palest are not totally without color (Fig. 6).

It seems obvious that in this milky white world being an albino is not a handicap but a distinct advantage and, because the area is rather remote from other normal colonies of mollusks, the genetic shift to lighter-colored shells has, through time, replaced the normal population.

Another muricid species that also occurs at Anna Plains is *Chicoreus cornucervi* (Roding, 1798) (Fig. 7), usually brown to tan in color, but here white except for a pale rose edge to the apertural lip. Albino examples of this species are more widespread; I also have them from Broome (as is the one figured by Radwin and D'Attilio, 1976, pl. 4, fig. 11) and from Geraldton, W.A., so the Anna Plains colony is not unique.

All species of muricids (and indeed anything) randomly produce albino specimens. I have examples of many different species from all parts of the world. Among shell dealers these are usually considered "rare" and, hence, more expensive. But certainly, at Anna Plains, this is the norm. I guess Darwin really was right — natural selection does work.

I would like to express my thanks to Joe Rinkens for telling me about this unusual locality, as well as for giving me the specimens figured here. It is always a wonderful opportunity to talk with someone who does a lot of collecting in one area and who is also an astute observer of the natural conditions under which these mollusks are found.

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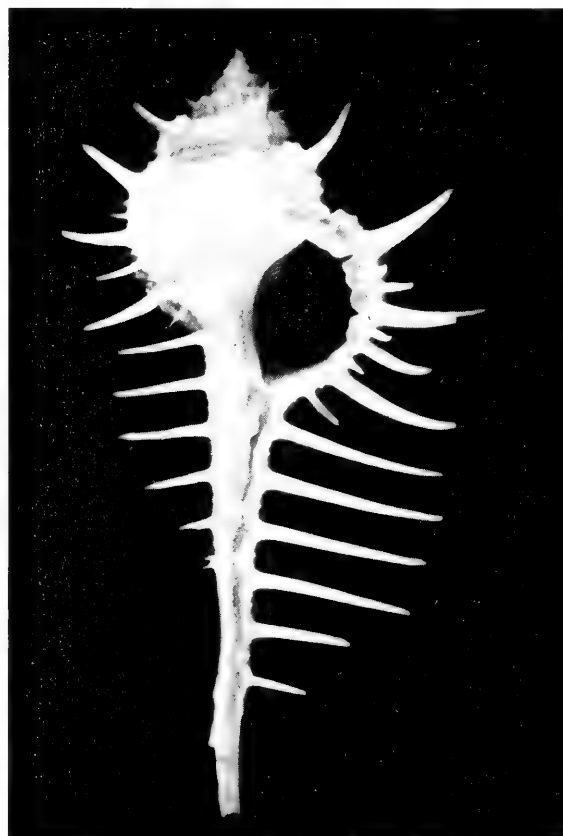


Figure 1. *Murex queenslandicus* Ponder and Vokes; Swain Reefs, Q'ld.; height 83.5 mm.



Figure 2. *Hexaplex stainforthi* (Reeve); Dampier, W.A.; height 52.7 mm.

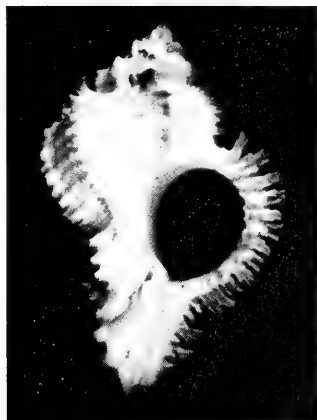


Figure 3. *Hexaplex stainforthi* (Reeve); Anna Plains, W.A.; height 55.4 mm.

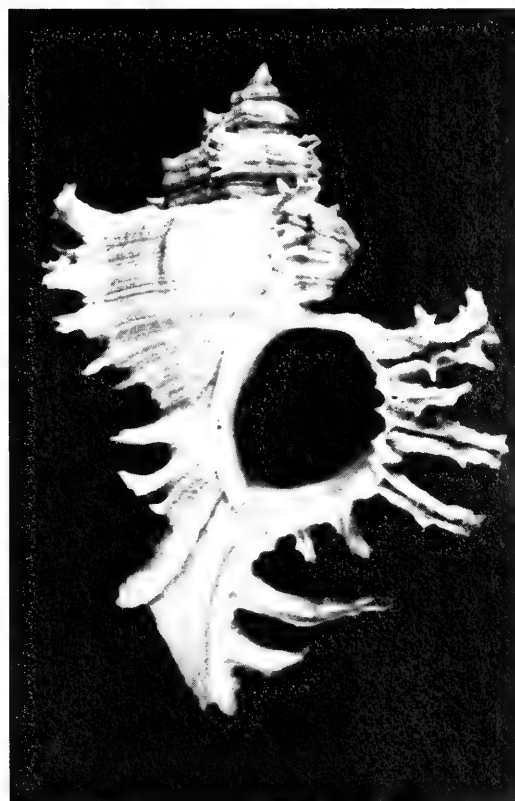
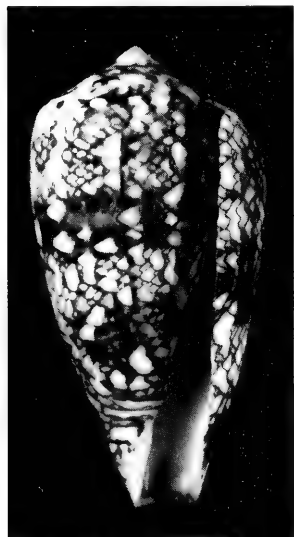
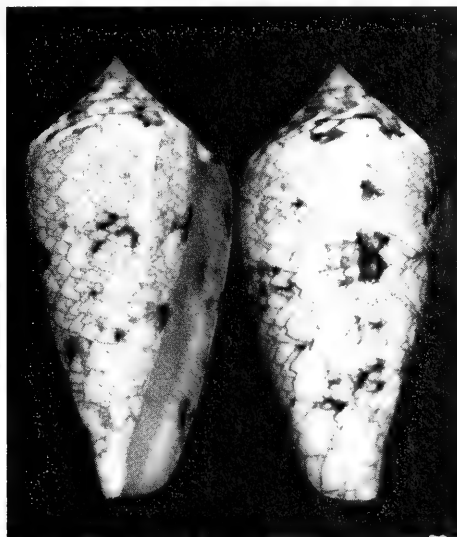


Figure 7. *Chicoreus cornucervi* (Roding); Anna Plains, W.A.; height 81.7 mm.

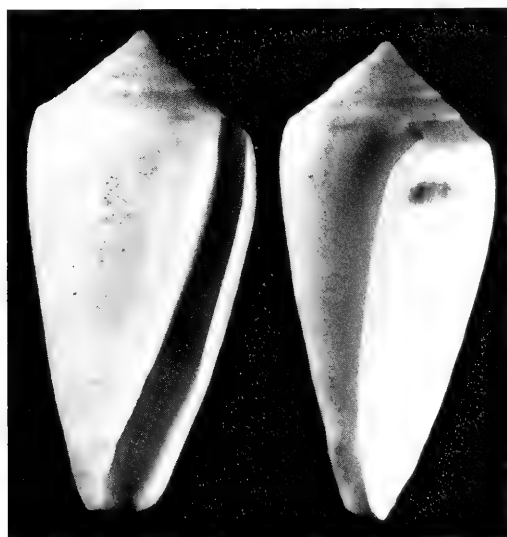
Figures 4-6 (below). *Conus victoriae* Reeve.



4) Port Hedland, W.A., height 48.8 mm

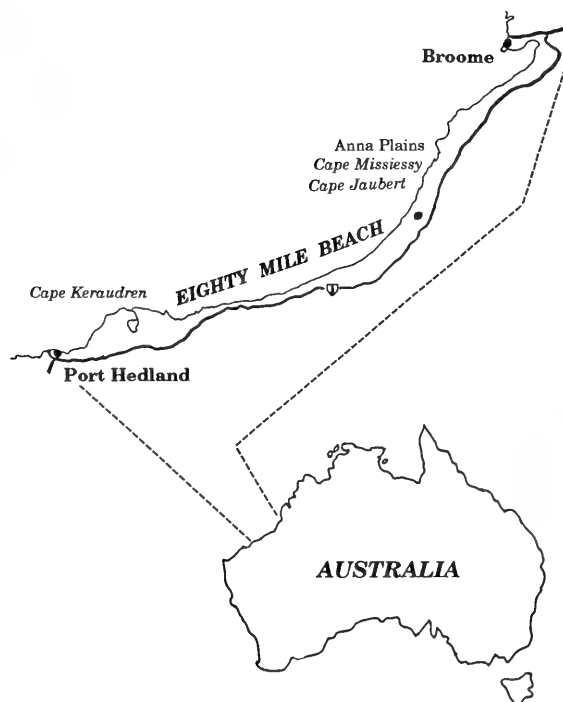


5) Anna Plains, W.A., height 40.0 mm



6) Anna Plains, W.A., height 43.5 mm

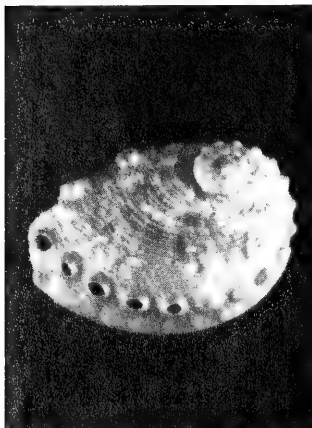
THE EIGHTY MILE BEACH AREA OF NORTHWESTERN AUSTRALIA



WESTERN ATLANTIC MISCELLANY

by Kevan and Linda Sunderland

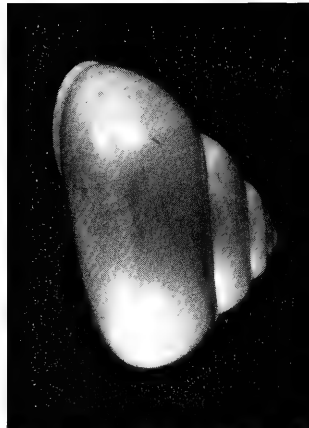
P.O. Box 130243, Sunrise, FL 33313



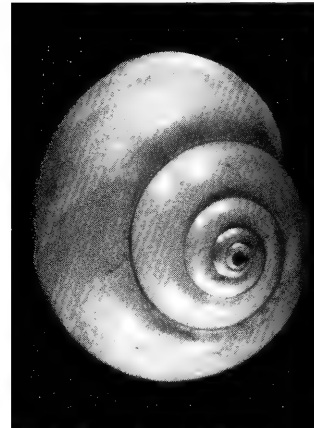
Haliotis pourtalesii Dall, 1881.
24mm. 240', off southwest
Florida.



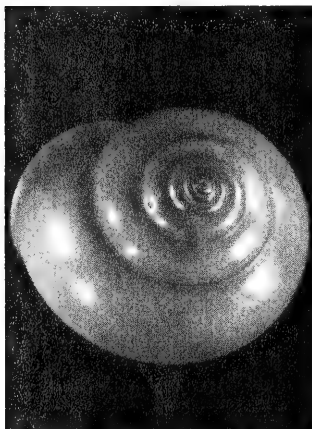
Gaza fischeri Dall, 1889. 30mm.
600', off Cuba.



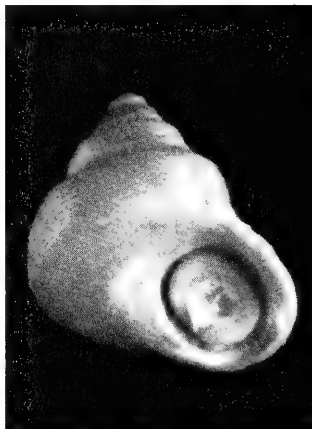
Gaza olivacea Quinn, 1992.
40mm. 500', off Venezuela.



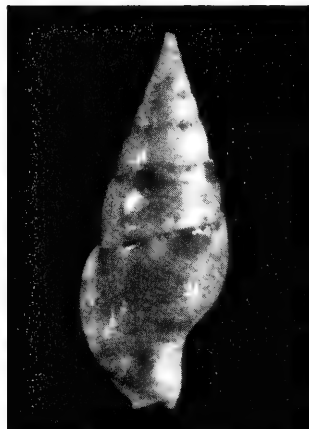
Gaza superba (Dall, 1881).
38mm. 2100', west of Tampa,
FL.



Gaza superba cubana Clench &
Aguayo, 1940. 23mm. 1500',
east side of Grenada.



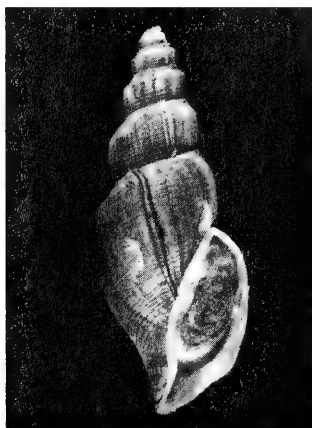
Bolma sunderlandi Petuch,
1987. 15mm. 35 m. Roatan,
Honduras. PARATYPE.



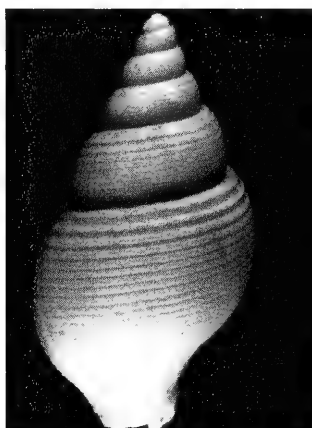
Strombina lindae Petuch, 1988.
24mm. 500', St. James,
Barbados. PARATYPE.



Strombina pumilio (Reeve,
1859). 24mm. 5', Isla de
Margarita, Venezuela.



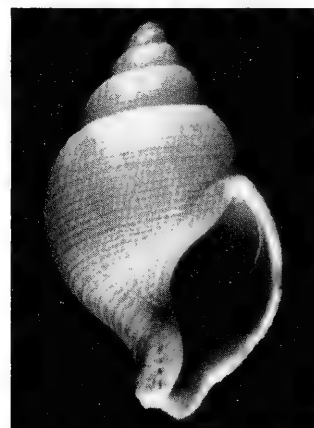
Beringius brychius (Verrill &
Smith, 1885). 40mm. 1000 m.
200 miles off Wilmington, NC.



Liomesus stimpsoni Dall, 1889.
52mm. 600', off Key West.



Mohnia carolinensis (Verrill,
1884). 35mm. 1,080', off Key
West, FL.



Ptychosalpinx globulus (Dall,
1889). 40mm. 680', off Tampa
Bay.

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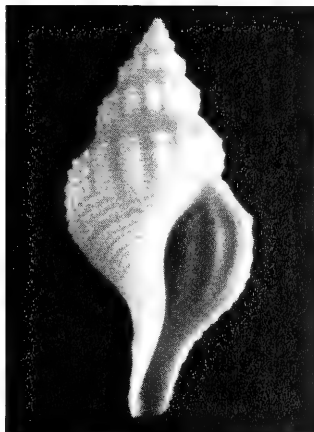
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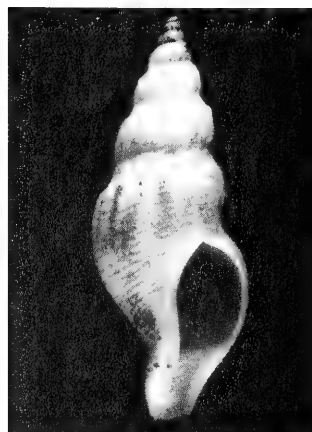
The intent of these centerfolds is not to distinguish between valid and invalid species, but to provide illustration of taxa not popularly available, for the information of the collector.



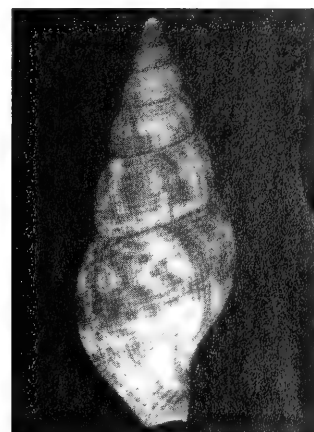
Pisania pusio (Linne, 1758).
42mm. 30', Utila, Honduras.



Harasewychia harasewychi
Petuch, 1987. 23mm. 200 m.,
off Gulf of Venezuela.
PARATYPE.



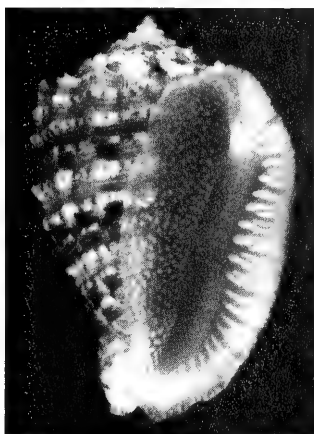
Bartschia fusiformis (Clench &
Aguayo, 1941). 66mm. 2000',
off Colombia.



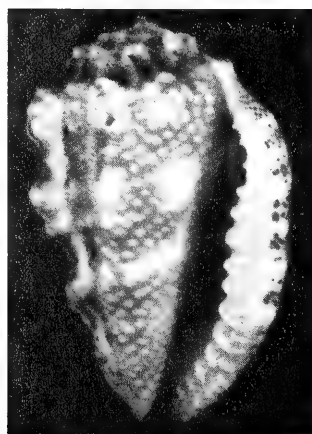
Bartschia significans Rehder,
1943. 51mm. 1,200', west off
Tampa Bay.



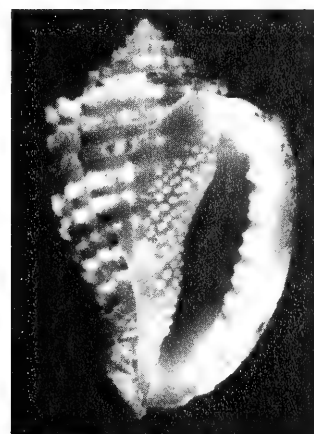
Bartschia sp. 65mm. 900', San
Salvatore, Brazil.



Morum dennisoni (Reeve, 1842).
54mm. 200', off Gulf of
Venezuela.



Morum lamarcki (Deshayes,
1844). 28mm. 40', off
Martinique.



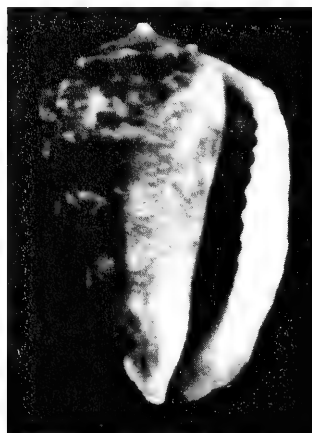
Morum lindae Petuch, 1987.
36mm. 250', north coast of
Colombia.



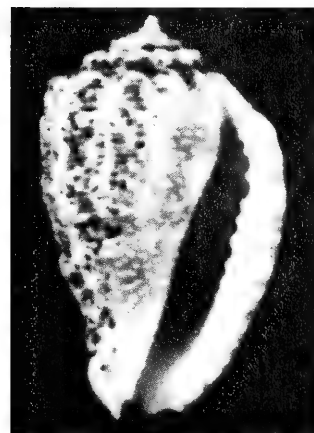
Morum matthewsi Emerson,
1967. 24mm. 160', off Ceara
State, Brazil



Morum oniscus (Linne, 1767).
20mm. 10', Eleuthera,
Bahamas.



Morum cf. *oniscus* (Linne,
1767). 24mm. 10', off Espirito
Santo, Brazil.



Morum strombiformis (Reeve,
1842). 23mm. 5', Utila,
Honduras.

The spell of the shell moves many of us to reflection — humorous, introspective, fanciful or deeply moral. It moves some of us to write of our musings in order to share them with others. The essay which follows is such a piece, written for the North Alabama Shell Club newsletter, The Nautiloid, but sent to us instead by Editor (and COA Past President) Glen Deuel, so that all of COA could share the inspiration its author has drawn from mollusks.

LESSONS OF THE SEASHELL

by Paula B. South

Today I was given a Harp Shell as a gift. For long moments I stared at it in wonder. How did this shell "happen"? I showed my new-found wonder to my friends. One friend turned it about in his hand and inspected from every angle its shiny deep grooves and swirled tan and white artwork. He even held it up to the light. He then said to me, and I will not soon forget, "Where is the factory that makes these shells? There's no way an animal made this one." What a delightful declaration! What a compliment to the Maker! The thought that someone might attempt to copy this natural wonder!

The seashell is a constant reminder to me that we are all sincerely loved by a powerful God who has an awesome sense of art and beauty, and a wonderful sense of humor, not to mention the fact that He loves to give us His handmade gifts. Not only are most seashells beautiful, but they also come with a lesson or two for us to learn from them. Here are a few:

A Lesson on Giving - A short stroll along the shore might yield several seashells. Sometimes they become so numerous and common that we, astonishingly, become "ungreedy" and lose interest in picking them all up, and then sometimes we even begin to give them away or throw them back! Watch a small child sometime, shrieking with delight at the colorful trinkets washed up on the shore. He will bring overloaded handfuls of his bounty to his mother for her to see, to him comparable in resplendence to a bouquet of spring flowers. Watch his pleasure as she accepts his gift. When it's time to leave the beach, some of the "bouquet" might be left behind, but hopefully the lesson will go with the child.

A Lesson on Humility - Even with all our pride and technology, the most talented sculptor can hardly begin to copy the intricate design of the most beautiful seashells. It must frustrate some artists to think that a slimy little creature has more of a sense of art than they do.

A Lesson on Appreciation - Then there's the fact that some living creature created this shell with the years of its life, making the gift even more intriguing and valuable.

A lesson on Impartiality - Take a look at the Oyster Shell, the Pen Shell and the Clam Shell. While their exteriors look like something the dog dragged home, their beauty is found within. Likewise, with some polishing, the homely fresh water mussel becomes quite beautiful. Consider again the oyster. There are farmers who, in warm, sun-filled, nutrient-rich underwater farms, care to nurture and grow these grotesque-looking shells for their pearls. These farmers, in return, are rewarded "richly." Just as there are shells that are exquisite works of art, there are some so plain and common that no physical beauty is apparent. But they are all spectacular when you consider the jewels they yield, or when you study their geometrical perfection and are reminded of how wonderfully made they are.

A Lesson in Light-heartedness - The large Triton's Trumpet with its black stripes and patches of varying shades of brown and burgundy is astonishingly beautiful. The Moon Shell with its gray-blues and soft spiral resembles a strong swirling ocean current. The Tapestry Shell looks like a fat brown cat sitting compact in the palm of your hand. Then there's the immensely ugly "Giant Watering Pot." You tell me! It does not look like a seashell by any stretch of the imagination. If I were walking on the shore and found one of those, I think I might be offended! "Okay, that's just great. I travel all the way to Southern Japan to find seashells, and look what washes up on shore!" But then I would pick it up, about to toss it, and something about it would catch my eye. Upon inspecting it and finding how incredibly ugly it really is, I would most certainly have to laugh to keep from crying — and learn a lesson about not taking life so seriously!

A Lesson on Patience - Needless to say, my respect for the seashell runs very deep. I would rather find one empty on the shore of the ocean or in the deep than take the life of the occupant before his work is done. It is my privilege and joy to patiently wait. There is nothing I enjoy more than the seashore and its beauty, its brilliantly colored sky at sunset and at dawn. It is an honor and a pleasure to humbly and gratefully wait, and to receive what trinkets the ocean and its Creator may decide to bestow on me.

*5907 Higdon Road, Huntsville, AL 35811

AMU ABOARD ROYAL CARIBBEAN

The American Malacological Union is departing custom as well as dry land this year for their 59th Annual Meeting. This exciting event will be held shipboard on June 21-25, 1993, aboard the Nordic Empress, stopping at Freeport, Bahamas; Nassau, Bahamas; and CocoCay, Bahamas.

Once on board The Nordic Empress, however, the meeting will follow the traditional format, with a symposium featuring patterns of speciation in mollusks, contributed papers, sessions on diverse aspects of molluscan biology, field trips to various islands, and an auction of publications and other items of malacological interest. The Bahamas will provide unique opportunities to study and compare tropical island faunas with those of the temperate United States.

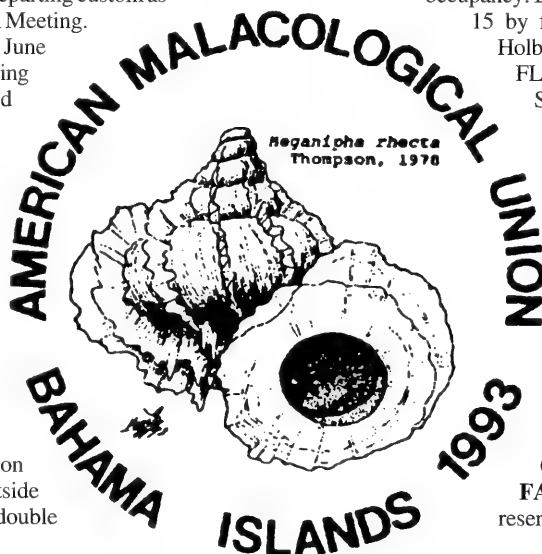
This innovative and unusual convention venue is temptingly low priced at \$675 for outside cabin, \$598 for inside cabin, per person, double

occupancy. But you must make a commitment by December 15 by forwarding your \$100 per person deposit to Holbrook Travel, Inc. 3540 N.W. 13th St., Gainesville, FL 32606. Phone (904) 377-7111 (800) 451-7111.

Second and final payments are due January 15 and April 19, 1993, respectively. (You may obtain a refund up to 60 days prior to departure.) Discounted airfares are also available to Miami.

A limited number of student discounts are available on a first-come first-served basis, and graduate students who present a paper on their own research will receive a discount of up to 50% off the cruise fare.

AMU registration is \$60 prior to Jan. 15, \$75 thereafter. The six field trips are each \$15. Write Fred Thompson, Florida Museum of Natural History, University of Florida, Gainesville, FL 32611 [Phone: (904) 392-1721, FAX: (904) 392-8783] for more information and reservation forms.



It's Easy To Have A Shell Show

or

HOW MANY BLUE RIBBONS DO YOU HAVE?

by Betty Jean Piech

Like many shell clubs, ours (the Wilmington Shell Club of Delaware) is too small to adequately take care of all the work involved in a full-scale shell show — disappointing, but a fact. However, in 1980 we decided on an alternative that would require an absolute minimum of work, — our “Mini Shell Show.” It was so successful that for several years it was an annual event, but now we plan to have one about every other spring. Our only objective is to have every member participate and have a good time without requiring a great deal of effort on the part of anyone.

Pre-Planning (requires a tremendous amount of time!):

If the show is to be held at our April meeting, it is announced in our annual October calendar (we only meet October through May). The Mini Shell Show Committee consists of the Chairman, who is the Vice-President of the club and also its Program Chairman, plus the Club President, and anyone else the Chairman wishes. This Committee selects four categories to be used for the Show, ignoring numerous, unsolicited, ridiculous suggestions from the membership-at-large. At the March meeting members are reminded of the upcoming show and the categories are announced. The April Newsletter, a week or so before the meeting date, also carries the categories, and the rules (which have remained pretty much the same from year to year). If you think this does not provide enough time to prepare an exhibit, read on.

Set-Up (probably requires one hour of work for the Committee and volunteers):

The afternoon of the Show, 3' x 8' tables are arranged at one side of the meeting room, one table for each category, labeled appropriately. The tables are marked off into 12" squares with paper masking tape. A display number (from 1 to ?) is placed in each square. The number of squares (and numbers) depends on how many entries are expected.

Rules (requires no time — same rules every year):

Each display consists of a single shell unless otherwise specified (a growth series, for example). On the Show night each exhibitor places his shell in the center of a 12" display square. No background material or display stands are permitted. The only thing allowed in addition to the shell is a 3 x 5 card containing its name and locality, if known. This card is placed in a corner of the square. On the reverse side of the card, not exposed until the winners are announced, is the name of the exhibitor.

As soon the exhibitor has placed his shell and card to his satisfaction, he leaves the area and chats with other members until all displays are in place. Each member is entitled to only one exhibit per category, but each individual in a family is entitled to his own entry. Unless there is a restriction listed for a category, the shells may be self-collected, purchased, or traded, or a gift. But they must belong to the displayer. For the few members of our club who self-collect, we occasionally have a self-collected category restriction. Also, a member must be present to exhibit.

Voting (between 30 minutes and an hour, depending on the amount of discussion/dissension among the voters):

Each member present gets a ballot on which to vote by display number for first, second, and third place in each category. Voters may discuss individual exhibits but may not move or touch any shell or card. Completed ballots go to the 3-member Balloting Committee, chosen by the Mini Shell Show Committee for their integrity. (Alter this rule if there are not three members present who fit this qualification.) They assign three points for each first place vote, 2 points for second, and 1 for third. The three shells receiving the highest totals in each category are the first, second and third place winners — three winners per table.

Shell of the Show:

A new award was added this past year — Shell of the Show, with a separate box on the ballot to indicate the best shell, regardless of category. The winning shell may also be a winner in one of the four table categories. A second vote decides a tie (Kleenex should be available if needed for the owner of the losing shell).

Awards (should not require more than 10 minutes):

We plan a brief program or activity during ballot counting, or let members get a head-start on the usual after-meeting refreshments and conversation. When the count is complete, the meeting is called to order again, the Balloting Committee announces the winning numbers, and the Mini Shell Show Chairman turns over the cards to reveal the owners, and presents the awards to ecstatic winners. A club volunteer makes the awards of crepe paper, foil, ribbons or whatever, as plain or fancy as desired, the main thing being that the expenditure of money and time is nominal. They are different for every Show. Naturally the trophy for the “Shell of the Show” is more ostentatious (has a larger amount of crepe paper or foil or ribbons or whatever). All awards should include the club name, category, and year of the Show.

Categories (This is the fun part):

The categories can be anything the Mini Shell Show Committee decides. Most are serious: “Your best specimen of the Muricidae Family,” “Your best all-yellow shell,” “Shell art of any kind” (special permission given upon request for additional space for such a category), “Your favorite adult shell under one inch.” Do be creative and give imagination full rein. How about “Most distinctive pattern on a bivalve,” “Most unusually shaped shell,” “Muricid with the most spines,” “Cones with the most spots,” or why not “Ugliest shell”? This last category created a tremendous amount of discussion and interest the year we used it. Once I suggested “A shell that makes you smile”; but no one else agreed, so I didn't get to exhibit my beautiful *Malea ringens* (Swainson, 1822), the Grinning Tun, and I missed out on what would have been a sure winner.

Clean-Up (probably 10 minutes required, more if the workers stop to talk):

Each exhibitor removes his own display. The Committee strips off the masking tape and returns the tables to their original locations.

Comments:

With 13 prizes awarded per show and a small membership, a large percentage of our exhibitors go home with an award. Over the years my husband and I have acquired 14 ribbons, that are as proudly displayed in our Shell Room as those from any BIG Shell Show. “But,” you ask, “doesn't everyone vote for his own display?” Sure they do, but the points awarded for second and third place then decide the winners. The entire club feels our method for determining the awards is the consensus of the members and fair. We all have a lot of fun and no one goes home tired. You can change any of the rules to suit your individual club, but do try a Mini Shell Show — you'll like it!

Shell clubs are like people — no two are alike. Each is a blend of the personalities and ideas of the members, past and present. But sometimes the innovations of one shell club transplant well to another shell club. If your club has a good idea or a better way of doing things, share it. Submit it to American Conchologist, Lynn Scheu, Ed., 1222 Holsworth Lane, Louisville, KY 40222 and maybe other clubs can use it.

LATIN 101

by Emilio Garcia

Latin is, without a doubt, a very grammatically complex language. Its pronunciation is, however, not very difficult at all. Some of us have totally given up on "Latin names," while others have the attitude: "Well, I'll pronounce it the way it comes out and the heck with it." Of course, both attitudes are perfectly legitimate; after all, we acquired this hobby to have fun, not to suffer. It may be interesting, however, to take a quick look at very, very basic Latin pronunciation, "just for fun."

First of all the vowels:

Although Latin has what are referred to as "long" and "short" vowels, the difference between the two sounds is so slight that, for the sake of simplification, we will deal with only one sound per vowel. These are as follows:

- a as in father
- e as in they
- i as in machine
- o as in note (but omitting the "u" sound of "ou")
- u as in rule

These five sounds are probably the most essential for a beginner. If you want to get serious about improving your pronunciation, the best way to go about it, once you have grasped the sound of a vowel, is to repeat it so many times that you don't have to think about it when you see it; then, repeat the five sounds again and again. Remember, those vowels will always be pronounced the same way. THEY WON'T CHANGE AS THEY DO IN ENGLISH. Of course, if you know a Romance language, you have it made.

Now for the consonants:

- c is always hard as in "cut"; nowadays, however, most scientists will pronounce it with the "s" sound before the soft vowels "e" and "i" and the semi-consonant "y"
- g is always hard as in "go," never as in "gem"
- s as in "sad," never as in "ease"
- t as in "top," never as in "pronunciation"
- ch has the sound of k
- ph has the sound of p
- th has the sound of t (see above)

The rules for stress in Latin words are rather complicated:

Despite this complication, however, we can generalize by saying that the last syllable of a word, the *ultima*, is never stressed; that words of two syllables are stressed on the first; and that most words are stressed on the next-to-last syllable. These rules also apply to compound words like "Calliostoma" (the word "stoma" is really Greek, but the rule is still applicable). Since "sto'ma" is stressed on the first syllable, and "Callio," as a prefix, is of secondary value, this genus should be pronounced "Calliosto'ma."

Practice these very basic rules of pronunciation, so that you are comfortable with them. And watch for our next lesson, Latin 102, coming in March. It will cover that most confusing of Latin topics, agreement between the genus and species names, otherwise known as "Endings."

*135 Oak Crest Drive, Lafayette, LA 70503

Spondylus Medicine — good and bad

by R. Tucker Abbott

Many years ago I was visiting the late Dr. Asela Franco in Cebu City in the central Philippines. She was an ardent shell collector and often took pay for her services from poor fishermen in the form of pretty shells. Some conchologists may recall that several "new species" of the Heart Cockle, *Corculum*, were named after her by the Smithsonian malacologist, Paul Bartsch.

Among the interesting tales related to me by Dr. Franco was how she administered the raw meat of any species of live *Spondylus* to her patients suffering from intestinal parasites. She claimed that patients suffering from infection of the small intestine by the Old World hookworm, *Ancylostoma*, would be cured by their ingestion of raw *Spondylus*. She also claimed success against the pinworm, *Enterobius*, and the large roundworm, *Ascaris*, sometimes recommending a second follow-up dose a week later.

But before you self-administer this medicine while you are on a collecting trip in Central America, take note of an outbreak of paralytic shellfish poisoning reported in the June 1990 issue of the *Revista de Biología Tropical*, vol. 38, pp. 129-136. The outbreak affected human populations on the Pacific coast of Costa Rica in October 1989. Half an hour after eating raw *Spondylus calcifer* Carpenter, 1857 several people felt severe numbness in the arms, legs and face. Paralysis of the legs and difficulty in breathing persisted in some cases for one week. Biologists at the Universidad de Costa Rica found large amounts of the dinoflagellate *Pyrodinium bahamense* in the intestine of the bivalve. A strong toxin was detected in heated, ground-up samples of the muscles, mantle, and "liver" of the *Spondylus*. Further research turned up the same toxin in nearby *Tagelus* clams which, when injected in mice, led to the paralysis and death of the mammals in less than five minutes. Cooked *Spondylus* meat also caused paralysis in people.

Vacationers wishing to live off the bounties of the seashore in the summertime in Alaska and the Canadian Maritime Provinces should also be aware of the possibility of getting paralytic shellfish poisoning from the Blue Mussel, *Mytilus*. If you feel a tingling of the lips as you begin your bivalve feast at the shore, stop the steamed-mussels-and-hot-butter routine and try a good old hamburger.

*P.O. Box 2255, Melbourne, FL 32902-2255

A NOTE ON LIGHTBOURN'S MUREX

by Betty Hunter

During the recent Conchologists of America Convention at Sawgrass, I was able to meet and chat with Jack Lightbourn following his presentation of "Shelling in Bermuda." I expressed pleasure at meeting the man for whom the spectacularly beautiful murex was named. He then told me the following story. A local newspaper reporter asked permission to write a story about *Pterynotus lightbourni*, Harasewych & Jensen, 1979. The reporter then requested photographs of the shell in a beach setting at the tide line. This was duly arranged, and after the photographs were taken, Mr. Lightbourn and the members of the group joined in conversation, ignoring this priceless shell. Alas! When they finally turned to the shell on the beach, the tide had come in unnoticed and whisked this wondrous shell back to the deep!

—from *Nov. Dec. 1992 Shell-O-Gram*,
newsletter of the Jacksonville Shell Club

6362 David Drive, Jacksonville, FL 32210

DID YOU KNOW?

The Indianapolis Shell Club still has a few copies of its "Linnaeus" print by Ed Blackwell. Prices are \$20 for black and white, \$60 for hand colored. Write Jack Gilbody, 621 Hillcrest Ct, Kokomo, IN 56901.

Our love and prayers go out to
Broward Shell Club member and COA member
Peggy Fox,
who was assaulted with a firearm
in mid-November.

A COA CONVENTION ON LESS THAN \$50 A DAY? YOU'VE GOT TO BE KIDDING ME!

No, we aren't! We are, however, making some assumptions about your accommodations during the convention. The first deals with your housing. At Edgewater you will be renting a condo unit rather than a motel room. We recommend that you stay in the Golf Villas as they are the most economical and are closest to the Convention Center. Each bedroom can be isolated from the rest of the unit and has its own full bath. The living room/dining room area has a queen sized sleeper sofa. This means, for example, that a 2 bedroom Golf Villa can sleep up to six persons. **Housing costs can be as low as \$22 a day!** How about food? Each Edgewater unit is equipped with a full kitchen (and a washer and dryer), so you can eat in if you desire (A grocery store is right across the street). Those who are saying, "The heck with that — this is my vacation!" will be delighted to know that Bay County is crammed with fine restaurants with excellent meals for under \$10. On average then, let's say **\$15 a day for food**. Throw in another \$10-12 per day to cover your registration fee, banquet reservation, etc. and the total cost per day is under \$50.

What's the catch? None, really. The low cost is based upon your forming a group to share a condo unit. We hope you old time convention goers will encourage the younger members of your club to join you.

What's really the catch? Wellll, there are some costs that we haven't included. If you are flying in, there is a one-time round-trip cost to and from the airport of \$15. The Tuesday, Wednesday and Thursday morning field trips (18 choices available) may have some costs associated with them depending upon the ones you choose and whether you have your own transportation available. Finally, if you intend to drop big \$\$\$ at the Auction and Bourse, don't blame us if the cost is more than \$50 a day.

So throw that loose change in the jar and get ready for July 11-17 and COA 93 at Panama City, Florida.

COA CONVENTION RATES AT EDGEWATER BEACH RESORT

Oceanfront Towers	Per Day
1 Bedroom:	\$135
2 Bedroom:	\$175
3 Bedroom:	\$235
Oceanfront Midrises	
1 Bedroom:	\$135
2 Bedroom:	\$165
3 Bedroom:	\$235
Golf Course Villas*	
Efficiency:	\$ 85
1 Bedroom:	\$100
2 Bedroom:	\$120
3 Bedroom:	\$160

Add p.585% tax.

Maid Service is available upon request for an additional fee.

*Recommended.

RESERVATIONS: 1-800-239-4853

Tell them you are a COA member.



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OUR COA CLUBS — A CLOSER LOOK

by Nancy Gilfillan

The Sanibel-Captiva Shell Club

In 1960, a few of the residents of Sanibel and Captiva Islands off the west coast of Florida decided to launch a shell club in order to learn more about the shells they were finding at their own "front door." Because members came from both islands, and because the meeting place alternated between the two, the club was called the Sanibel-Captiva Shell Club.

Since so many of the original members had a summer home elsewhere, they decided to meet from November to April. A few years ago meetings were expanded to October to May. Their May meeting is an educational field trip rather than just a shelling one. The club does not sponsor as many field trips as some other clubs because it is already located at one of the world's most famous shelling spots. Three or four trips are usually held each year; in past years, the club has held cruises to the Caribbean and trips to the Abacos, Bahamas, Cedar Key in Florida, as well as local trips to other islands in their area.

The club now meets at the Sanibel Community Center on Periwinkle Way on the last Wednesday of the month. The members usually have a pre-meeting dinner at one of the island restaurants at 5:30 p.m.; their meetings begin at 8:00 p.m. Because the interests of their 500 or so members are so varied, they try to alternate their programs to accommodate this large group: one month, marine; one month, fossils; one month, land or non-marine snails, etc.

The *Junonia*, the club's newsletter, is published five times a year. It carries on its masthead *Scaphella junonia* (Lamarck, 1804), A volute which can be found on Sanibel. The club's pin also carries the Juno's Volute logo. In addition, the club sells tee-shirts whose motifs change

yearly, as they are sold to the public each year at the club's shell show, the COA convention, etc. They have shell-motif Christmas cards for sale also.

ALL of the money the club raises is given away yearly. This is the only shell club that fully funds a graduate student in Marine Sciences at the University of South Florida, from entrance to graduation. Most of the money raised goes toward this support. In addition, they also give to about 15 to 20 other locally-aimed agencies for various projects, from Mote Marine in Sarasota, to Reef Relief, the new shell museum to be built on Sanibel, Edison Community College, both Sanibel and Captiva Conservation Foundations, the libraries on both islands, and other projects as needed.

The Sanibel-Captiva Shell Club holds one of the longest shell shows in this country. It is always held the first Thursday in March and goes through Sunday at the Sanibel Community Center. Other clubs enter the shell show heavily. This show is open to the public. One of the most eagerly awaited and popular exhibits is held outside the building. The club maintains tanks and teaches at the Sanibel-Captiva Elementary School, and each year the tanks are brought to the shell show and are manned by the students. They are delighted to share their considerable knowledge about the life cycles of tulips, whelks, angel wings, etc., and the public is equally delighted with the students' knowledge and enthusiasm. If you haven't had this experience yet, do try to go to one of their shell shows; you'll enjoy it!

If you would like to join this stable, active, and growing club, please send \$12.00 (single) or \$15.00 (double) to the club at P.O. Box 355, Sanibel, Florida 33957. And if you would like to attend a meeting and get acquainted with these nice folks, contact Margaret Thorsen, 1440 Middle Gulf Drive, #3-B, on Sanibel Island. They will all make you most welcome.

***This will be your last issue of American Conchologist unless you renew your COA membership.
Do it today!***

BOOK REVIEW:

Bivalves of Australia, Volume 1. By Kevin Lamprell and Thora Whitehead, 1992. Crawford House Press, Bathurst, NSW, Australia. 182 pp. 77 + 2 colored plates, several illustrations. Hard cover. \$40.00.

I LOVE this book! So easy to use, and to look at, that it seemed like an old friend the moment I opened it. I'm one of those philistines who flips through a book back to front, first time through, hardly seeing the first few pages until I'm coerced. I may use a book for months before I see the title page or credits. Always in a hurry, I expect. Whatever. That's how I first approached Kev and Thora's new book.

I flipped through. I admired really good clear photos on traditional black backgrounds. Yes. That I liked. And both exterior and interior views of each species. WITH muscle scars and pallial lines darkened when important. The corresponding text on the page facing the plate. Right where I need it. Nice. And hmmm! Species numbers on text and plates like Twila Bratcher's fine book on the Terebridae — marvelous! Another quick flip showed me they too had used the species numbers in the index. Such a simple method for easy moving around in a shell book!

That persuaded me to read a few entries. They are good. Each one offers a description with color, size and periostracum, distribution, and synonyms where applicable; sometimes there are helpful species comparison notes. A short section introduces each family. Have a look:

Family Carditidae Fleming 1828

Variable in size and shape; sculpture of strong radial ribs; shell margins crenulate internally; ligament external. This family has not been recently revised. The classification adopted here follows Lamy, 1921 and Chavan, 1969b. It is evident that the available generic groupings are inadequate for a satisfactory classification of Australian species; this must await a revised, phylogenetic classification of the Carditidae.

See how it lets you know just where you stand. And there are small diagnostic paragraphs on each genus too.

While I was flipping through the index, I noticed there was a helpful little glossary in the back, explaining such bivalve-specific terms as "chondrophore," "opisthodetic," and "prosogyrate" and including abbreviations like "auctt." and "cf." I also flipped open an impressive seven pages of bibliography. All of which convinced me I'd probably better get orthodox and check out all that preliminary stuff. Forward I flipped, to note that there were some awfully pretty endpapers, and a couple of beautiful color photos. A Pictorial Guide to Families with charming little black and white watercolors of a representative species

from each family — same artist as the endpapers — wonder who did them? Thora's daughter, it turns out. I like that feature. I might have added page numbers, but come to think of it, I can, if I wish, in my own copy.

Time for some serious reading... the introduction is well thought out and quite complete... even to helping the bivalve novice figure out which is the right valve and which way is up on a clam. The interesting preface is somewhat of a background and a history of the writing of the book, with lots of good bits about Australian malacology.

Then, what serendipitously turned out to be saving the best for last, I read the Foreword by Dr. Winston Ponder of the Australian Museum. Some of the compliments that Thora and Kevin so richly deserve are here, along with some welcome words for other serious amateurs:

...We are fortunate that it has long been a tradition in malacology...that amateurs play such an important role....One very important task that is sometimes taken on by non-professionals is the interpretation and amalgamation of the technical work produced by scientists and the wealth of information available in public and private collections into a form that is readily accessible and usable by those interested in natural history....Such is the nature of this book.

This work has been produced by two of the most dedicated and enthusiastic people that I have met. By producing this volume, Thora and Kevin have made a major contribution to the literature on Australian Mollusca...The authors have gone to great pains to ensure that the latest taxonomic decisions have been incorporated and, in the process of putting this work together, have had to make many taxonomic judgements and new interpretations. Thus this work is not just a "field guide" but it also contains important new contributions to the literature.

Did I mention that this is a book about marine BIVALVES? Yes, the OTHER mollusks. Not just pectens and Spondylus, but pages and pages of sleek tellins, and enough colorful cockles to stop your heart! Seventeen plates of those endlessly varied and beguiling Australian Venus clams. Not all the families are covered. A mere 26. But I'd challenge most of you just to name 26 families of bivalves. Do you know the Trigoniidae? Pretty, beaded shells with mother-of-pearl interiors, like a river mussel. You say you aren't a bivalve collector? A little time with this book and you'll be tossing around terms like "taxodont," and giving shell club lectures on the difference between lunules and escutcheons.

I'd advise, dear conchophile, that you do something nice just for yourself this holiday season — order a copy of ***Bivalves of Australia*** from your favorite book dealer. And do start on page 1 — you'll soon be glad it's just Volume 1, with Volume 2 still to come. — Ed.

A RARE OLD NEW CALEDONIAN BURSIDAE

by Charles Glass and Robert Foster

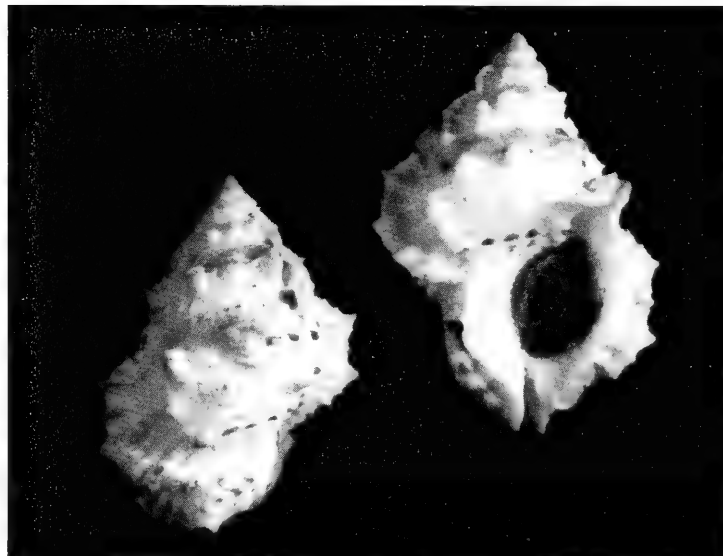
Bufonaria (Bufonaria) thersites

(Redfield, 1846)

Though this species was described (as *Bursa*) over 140 years ago, it remains quite rare and rarely seen or illustrated. We were fortunate to obtain a couple of specimens which were taken live in 40 meters off Belep Islands north of New Caledonia in 1987. These shells, AbS 87-031,032, are white with few tan to brown markings and a pale orangey-yellowish aperture, measuring 49.5 and 56mm.

*Abbey Specimen Shells, P.O. Box 3010, Santa Barbara, CA 93130-3010

Two specimens of *B. thersites*
apertural and dorsal views



TROPHY WINNERS



Doug and Louise Compton share the COA Trophy they won at the North Carolina Shell Show in October. Their exhibit featured the subfamily Harpinae, so it was sure to be a colorful and stunning display. Congratulations and good work, Comptons!

Barbara Barfield won the COA Trophy at the Panama City Shell Show 1992. Here she is with her trophy and her champion 27' exhibit, "A World of Tellins." Something of a bivalve specialist, Barbara contributed an article to American Conchologist two years ago on American cognate bivalves.



AFC TO HOST FIFTH INTERNATIONAL SHELL SHOW

The Fifth Rencontres Internationales du Coquillage de Collection will be held Feb 14 and 15, 1993 from 9 a.m. to 6 p.m. The site of the Association Francaise de Conchyliologie's annual celebration of French shell collecting will be in Paris this year, in the Municipal Buildings of the 4th District of Paris, 2 place Baudoyer 75004. The French Shell Show, like other European shell shows, is more like our COA Bourse than it is like a U.S. shell show. There the emphasis is on sales, while here it is upon competition.

For more information, write to Gilbert Jaux, 3, rue Saint Honore 78000 Versailles, France.

SHELLERS' JAMBOREE IN MAY

Suncoast Conchologists, Inc. will again host its biennial hit, the Shellers' Jamboree. It will be held in the Knights of Columbus Hall in Largo May 29-31.

PICTURE THIS

by Pinky Pinkerton

Listed below are a couple of really dumb things I have done after becoming a shell collector. I think it would be fun if others would submit or admit to things that they wish had not happened. Submit your own "Picture This"

Picture This:

The year was 1968. We packed a HUGE piece of Lace Coral in loose chicken feathers. To make matters worse, we then tried to remove them by spraying with a water hose.

Picture This:

The year was 1961. Bought an Achatina fulica, the Giant East African Snail, for \$1.50 in a Texas shell shop just before being transferred to Hawaii. There we step on them on the sidewalks every night and they live in the forests by the umpimillions. This was a large one, though.

*Use that gold renewal form now,
before you lose it,
and pay your COA 1993 dues today!.*

BOARDTALK...

From COA Membership Director Bobbie Houchin: If you haven't paid your 1993 dues, please retrieve the gold 1993 renewal notice from your September 1992 American Conchologist. Why not save some of your Holiday money and give yourself a treat by renewing for 1993 now? Don't miss the March 1993 issue with interesting articles as well as information on the COA '93 Convention.

Many, many thanks for your support of the COA. We appreciate your efforts in recruiting new members and keeping up with your fellow members.

Don't forget to send any change of address as soon as possible. You know the **American Conchologist** is sent by bulk mailing and is not forwarded by the post office.

From Past President Glen Deuel: After reviewing some film taken of the 1992 COA Convention, I found it obvious that many members were absent from several meetings, especially the General Business Meeting (GBM). This is not unusual and not surprising. The Bourse, close on the heels of the GBM, is always one of the biggest attractions of the convention, and members want to get there early. Also, sometimes the GBM gets a bit boring. In addition, the board of Directors does a good job of taking care of COA business in advance so there is little left for the membership to do except vote on the new slate of officers. COA President Doris Underwood plans to move the GBM to the first part of the week to eliminate the conflict with the Bourse. Maybe Doris can tell good jokes and/or perform some tricks of magic to entertain you while informing you on business transacted. Seriously, I'm suggesting that the membership be given a written account at the GBM of the past year's finances, activities, and business, to be read and studied as one desires, to reduce the length of the meeting. Giving prizes has had moderate success at swelling attendance at these meetings. We have thought about having some other surprise or incentive to increase attendance. The Board members would like some comments, ideas and suggestions from you. Would you like to see any changes in the annual business meeting? Let us hear from you.

From Treasurer Walter Sage: As of mid November, approximately 525 members are paid for 1993. Notice the reminders on the envelope and throughout this issue — if you haven't already paid, please do so soon. If you HAVE paid, please don't pay ahead. It causes extra bookkeeping. Thanks also for the sales items orders sent to Property Manager Hank Foglino. Please make checks payable to COA and not personally to Hank. We have sold out of the Crown Point Pins. Thanks to Crown Point, Ft. Myers and S. Carolina who donated their pins to supplement the COA grant program.

IN MEMORIAM

Betty N. Forrest

Ruth McElya

Cora A. Staples

—◆—
We extend our condolences to
Aurora Richards on the death of her son,
Thierry Dantoing.

Letters:

COA member Pat Burke of Cape Coral, Florida, who collects fossils as well as shells writes to tell us of a new threat to the collection, preservation and study of the fossil past. She encloses the following letter from Jim Pendergraft, President of the Florida Paleontological Society, as printed in the F.P.S. Newsletter V. 9, No. 2:

Dear Fellow Paleontological Advocates:

Senate Bill #1307 was introduced to the United States Congress on July 30, 1992 by Senator Max Baucus (Montana). This bill would make all fossil collecting on public lands illegal. Fossils salvaged from the destructive power of nature and legal mining operations would be impossible to collect. Hundreds of new species and scientifically valuable specimens which could be discovered by amateur and commercial collectors will be lost forever. The professionals simply don't have the resources (time and money) to spend in the field. **Professional and advocational paleontologists need to work together to preserve history rather than let it vanish!**

Please don't be complacent. This legislation is the result of a few radical professionals and is not completely supported by the Society of Vertebrate Paleontology. In fact, Dr. Clayton Ray, curator of V.P. at the Smithsonian, resigned in protest. Many professionals have publically spoken against the bill, including Dr. Robert Bakker, Dr. John Ostrum, and Dr. Donald Wolberg.

This legislation would also prohibit school groups and clubs from collecting even the most [common, scientifically unimportant] fossils on beaches or in rivers.

Everyone must act now!!

- First call 1-202-224-3121 (U.S. Senate switchboard) and ask for your Senator's office.
- Second, inform them you are a voter from your state.
- Third, state your protest to Senate Bill #S3107. Tell them that this bill will have an adverse effect on your hobby, recreational activities, business, or whatever you wish.
- Fourth, a follow-up letter will double the impact of your phone call.

These views are my own, and do not necessarily reflect those of the entire board or membership of the Florida Paleontological Society.

From reading some attached literature, it appears that this bill is a nightmare for fossil collectors, as well as for the average citizen visiting public lands, for researchers, institutions, industry and the taxpayer and consumer. It will create another set of restrictions on our freedom and another expensive bureaucracy with no benefit to the public. Furthermore, it seems to be in direct conflict with the findings and recommendations of the National Academy of Science's 1987 Committee on Paleontological Collecting: "...in general the science of paleontology is best served by unimpeded access to fossils and fossil-bearing rocks in the field...in sharp contrast to the prevailing situation in archaeology." — Ed.

Dear Editor,

I am responding to section 40 of "Uncle Winston's Big Book of Things to Do When You Can't Get Your Feet Wet" [September, 1992, pp.8,9]. My wife Joy and I were able to attend the 1991 COA Convention on Long Island. We were truly looked after and would like to relate a story that only the Long Island Shell Club knows about, but I think it's about time the whole world knew it.

A few days before we left New York we visited Walter Sage III at the Museum of Natural History. In the gift shop he introduced us to some rather large rubber and plastic snails. We fell in love with them and brought them home. We named them Walter IV and V in his honor and they sit proudly on our dressing table. They are the encouragement we need to get there again real soon.

Ed and Joy Beulke
P.O. Box 591
Morwell, Australia 3840

ARE YOU A PINHEAD?

by Louis Brown

Don't be offended if you are asked the above question at the next COA Convention. It has nothing to do with the shape of your head or your intelligence, but with the small metallic objects that adorn the hats and lapels of a growing number of COA members. Shell club pin collecting has become a main interest at the booths, Bourse, and club tables; lately our conventions have devoted entire early morning sessions to pin collecting and trading.

Though most of us have a couple of shell club pins stuck away in a drawer or on our lapel for club allegiance and identity, the pinhead — so named for his tendency to display his many pins on caps or hats — goes a step further. To the pinhead, trading is essential. In fact, most collectors would rather trade one of their pins for yours than buy it.

Getting Started

Once you have a couple of "traders," or spare pins, to start you off, it's time to start writing to all the clubs listed in the COA directory. Though some pins will come rather easily (as many as ten or twenty in a few months), it may take years to get the rare ones — those from defunct or foreign clubs.

Shell club pins actually originated in a foreign land — Australia. Jean and Crawford Cate had seen Australian shell club members wearing their "badges" and, upon returning to the U.S., proposed that the Sanibel-Captiva club design one for their members in 1967.¹ The second club pin, Cate believed, was created by the Louisville Conchological Society in 1973.² The idea spread and now at least 75 pins exist.

Perhaps one of the greatest joys of pin collecting is the nice people one hears from when one writes for pins. Some clubs are even thoughtful enough to send specimens of the shell on the pin, along with a description. The clubs that don't have pins are mostly genuinely sorry that they can't trade you one. After all, everyone loves a pinhead!

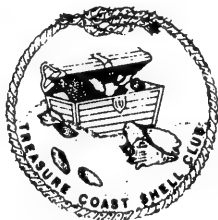
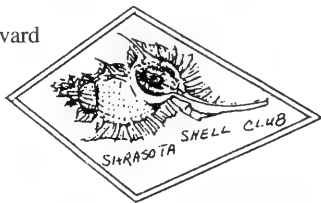
The following is a list of clubs known to have club pins:

Florida Shell Club Pins

Astronaut Trail Shell Club of Brevard
Bonita Springs Shell Club
Broward Shell Club
Central Florida Shell Club
Fort Myers Shell Club (DEFUNCT)
Greater Miami Shell Club
Jacksonville Shell Club
Marco Island Shell Club
Naples Shell Club
Palm Beach County Shell Club
* Pinecrest Shell Club
Sanibel-Captiva Shell Club
Sarasota Shell Club
* South Florida Shell Club (DEFUNCT)
Southwest Florida Conchologist Society
Suncoast Conchologists
Suncoast Conchologists 1991 Shellers Jamboree
St. Petersburg Shell Club
Treasure Coast Shell Club

Other U.S. Shell Club Pins

Boston Malacological Club
Chicago Shell Club
Cincinnati Shell Club
Coventry Jr. High Shell Club
Conchologists of America — old pin — white
" " " — new pin — white w/red rim
Coastal Bend Shell Club



Crown Point Shell Collectors Study Group (DEFUNCT)
Georgia Shell Club — old pin — large and heavy

" " — new pin

Greater St. Louis Shell Club
Houston Conchology Society
Indianapolis Shell Club
Long Island Shell Club
Louisiana Malacological Society
Louisville Conchological Society
Minnesota Society of Conchologists
National Capital Shell Club

* New Jersey Shell Club (DEFUNCT)

New York Shell Club

North Alabama Shell Club

* North Carolina Shell Club — old pin ?

" " " — new pin

North Texas Conchological Society
Northern California Malacozoological Club
Oregon Society of Conchologists
Pacific Shell Club (Los Angeles)
Pacific Northwest Shell Club
Paleontological Research Institution
Palmetto Shell Club
San Diego Shell Club
San Diego Shellers Club (DEFUNCT)
Shell Club of Mystic, Connecticut
South Carolina Shell Club (DEFUNCT)
Wilmington (Delaware) Shell Club



Foreign Shell Club Pins

Australia
* Albany Shell Club (DEFUNCT)
* Bowen Shell Club (DEFUNCT)
Cairns Shell Club
* Cleveland Bay Shell Club (DEFUNCT)
Innisfail Shell Club
Keppel Bay Shell Club
* McKay Shell Club (DEFUNCT)
* Magnetic Island Shell Club (DEFUNCT)
Malacological Society of Australia
Malacological Society of South Australia
* Port Curtis Shell Discussion Group
* Port Dennison Shell Club
Port Phillips Bay Shell Club
Proserpine Shell Club
Townsville Shell Club
Western Australia Shell Club
Whitsunday Shell Club



Other Countries

Christchurch Shell Club of New Zealand
Conchology Section of Auckland Museum, New Zealand
* Belgian Society for Conchology (15th Anniversary pin)
* Bristol Naturalist Society, England
Association Francaise de Conchyliologie (AFC)
* Centro Portuges De Actividades Subaquaticas

No one, to my knowledge, has collected all the pins, though four or five collectors have fifty or more. If you or someone in your club collects pins and know of pins not on the list, or have those marked with an asterisk, please contact the author.

¹ COA BULLETIN Vol. 16, No.1, 1988

² Personal correspondence, 1985

KING PHILLIP CAME OVER FOR GOOD SPAGHETTI

by Alan Gettleman

First published in the Central Florida Shell News from a mini-lecture Alan did for the club, this little "Best of the Newsletters" has been the rounds of most of the shell club newsletters. But we republish it here because we think it is a mnemonic that is just too good to miss. After all, not all shell clubs publish newsletters, and not all of you are shell club members. So we print it again here in hopes that none of us ever again forgets whether Gastropoda is an order or a class.

Before you think I have completely lost my mind, the title, King Phillip Came Over For Good Spaghetti," is a mnemonic (knee-mon-ick). A mnemonic is a memory jogger. The best known mnemonic acronym is TGIF, standing of course for Thank Goodness It's Friday. The mnemonic will allow you to remember how taxa (units of classification, plural of taxon) are ordered in zoology. Mollusks are arranged based on their evolutionary relationship, called the "natural system."

To remember the phylogenetic relationships of taxa (that is how mollusks are arranged scientifically), the sequence is Kingdom, Phylum, Class, Orders, Family, Genus, and Species. The mnemonic letters "KPCOFGS" can easily be remembered as: "King Phillip Came Over For Good Spaghetti."

KING (K) is for Kingdom — either the Animal or Plant Kingdom

PHILLIP (P) is for Phylum — which is the Phylum Mollusca.

Other well-known phyla are:

Arthropoda (horseshoe crabs, spiders, insects, crustaceans)

Echinodermata (all marine; urchins, sand dollars, and starfish)

Coelenterata, a most diverse phylum including:

Colonial animals (Portuguese Men of War)

Single organism animals (jellyfish)

Porifera (sponges)

CAME (C) is for Class — The molluscan classes (of Greek derivation) are:

Gastropods, Univalves (stomach foot)

Scaphopods, Tusk Shells (boat foot - Apparently the Tusk Shell laid on its side resembles a boat hull with the small pointed posterior end resembling a prow.)

Pelecypoda, Bivalves (hatchet foot)

Cephalopoda, Nautilus (head foot)

Monoplacophora, the Chitons (many plate shell)

Aplacophora, wormlike body whose mantle secretes calcareous spiniculus but not a shell (without plate shell)

Rostroconchia (fossil only)

OVER (O) is for Order — For the Gastropoda, examples are:

Archaeogastropoda [oldest] (Pleurotomariids, Turbans)

Mesogastropoda [middle] (Littorinas, etc.)

Neogastropoda [new] (Conidae, Mitridae)

This is why *Pleurotomaria* are listed prior to the Cones in books — not because the Pleurotomariids are rare, but because they are the older, the most primitive of gastropods.

FOR (F) is for Family — (similar genera)

GOOD (G) is for Genus — (similar species)

SPAGHETTI (S) is for Species — the basic unit of classification

As with any man-made classification of nature, these divisions do not always cover all the natural groupings. There are other variations: superfamilies, subgenera, subspecies, etc.

Remember, only generic down to subspecific names (genus, subgenus, species, and subspecies) are *italicized*. If you don't have italics on your typewriter or word processor, then these are underlined. Also, the Genus is capitalized, but not the species, even if the species reflects a proper name. So, *Dermomurex sarkini* (Vokes, 1992), named for Ed Sarkin, has lower case for the species name.

So when you forget what follows what in biology, you have only to remember:

King Phillip Came Over For Good Spaghetti!

1993 WINTER AND SPRING SHELL SHOWS AND OTHER EVENTS

by Donald H.Y. Dan

- | | |
|------------|--|
| Jan. 15-17 | Greater Miami Shell Show, N. Miami, FL
Norris McElya, 905 N.W. 15th Ave
Miami FL 33125-3625 (305) 642-1504
or
Mary Wetterer (305) 866-1928 |
| Jan. 23-24 | Astronaut Trail Shell Show, Melbourne, FL
Bobbi and Jim Cordy, 385 Needle Drive
Merritt Island, FL 32953 (407) 542-5736 |
| Feb. 5-7 | Broward Shell Show, Pompano Beach, FL
Charles Aronson, 1300 N.W. Terrace
Ft. Lauderdale, FL 33311 (305) 764-0768 |
| Feb. 11-13 | Ft. Myers Festival of Shells, Ft. Myers, FL
Edie Chippeaux, 1308 Biltmore Drive
Ft. Myers, FL 33901 (813) 936-4058 |
| Feb. 13-14 | Cinquieme Rencontres Internationales du Coquillage,
Paris, France
Association Francaise de Conchyliologie 1,
impasse Guemenee
75004 Paris, France (1) 40-27-96-72
or
Gilbert Jaux, 3, Rue Saint-Honore
78000 Versailles, France (1) 39-53-80-46 |
| Feb. 19-21 | Sarasota Shell Show, Sarasota, FL
Peggy Williams, P.O. Box 575
Tallest, FL 34270 (813) 355-2291 |
| Feb. 26-28 | Naples Shell Show, Naples, FL
Naples Shell Club, P.O. Box 1991
Anna V. Szent-Kirallyi
Naples, FL 33939 (813) 597-6115 |
| Feb. 26-28 | St. Petersburg Shell Show, Treasure Island, FL
Betty and Bob Lipe, 440 75th Avenue
St. Petersburg Beach, FL 33706 (813) 360-0586 |
| Mar. 4-6 | Sanibel Shell Show, Sanibel, FL
Georgette Laforet, 1119 Periwinkle Way #176
Sanibel, FL 33957 (813) 472-6290 |
| Mar. 11-13 | Marco Island Shell Club Show X, Marco Island, FL
Janet de Lambert, 880 Huron Court #301
Marco Island, FL 33937 (813) 394-6843 |
| Mar. 19-21 | Treasure Coast Shell Show, Stuart, FL
Lynda Zylman Jacaruso, 1850 S.W. Crane Creek Ave.
Palm City, FL 34990 (407) 220-2582 |
| Apr. 2-4 | Georgia Shell Show, Atlanta, GA
Horatio Buck, 4357 Hardwood Circle
Lilburn, GA 30247 (404) 979-8111 |
| May 29-31 | Shellers' Jamboree, Largo, Florida
Suncoast Conchologists, P.O. Box 1564
Palm Harbor, FL 34682-1564 |
| June 19-20 | XII Salon International du Coquillage, Lutry, Switzerland
Dr. Ted W. Baer, CH-1602
La Croix, Switzerland (021) 393771 or 207371 |

*COA Past President (1988-89) Alan Gettleman, formerly of the St. Louis, MO area, now lives at 2225 Tanglewood Lane, Merritt Island, FL 32953-4287

Strombina elegans Li, 1930 —

Solving a 60-Year-Old Mystery

by Walter Sage

In 1930, a Chinese student, Chih Chang Li, published his Master's thesis, "The Miocene and Recent Mollusca of Panama Bay" in vol. 9 of *Bulletin of the Geological Society of China*. Li had the assignment of working up a collection in the paleontology department of Columbia University, New York City, since 1907. Li recognized 71 "forms"; he considered 54 to be Lower Miocene and 17 referable to living species. Li named 20 species as new to science, mostly from single specimens, only six of them Recent. Among his new fossil taxa were *Strombina laevistriata* and *S. elegans* (in his summary list, *S. tenuilineata*).

In 1931, Dr. Henry A. Pilsbry at the Academy of Natural Sciences in Philadelphia borrowed Li's specimens for his own studies on Panama mollusks. Pilsbry came to very different conclusions than Li's, recognizing only eight Middle Miocene (Gatun) species; the remaining 63 he considered living species. Of Li's new species, Pilsbry recognized only two, *Tellina panamensis* and *Terebra cracilenta*, as "good" species. He listed Li's *Strombina laevistriata* and *S. elegans* as *Amphissa* (*Cosmichonch*) *modesta* and *Strombina turrita*. From Li's Columbia material, Pilsbry also named four new species — *Phacoides* (*Lucinisca*) *liana*, *Polinices rapulum limi*, *Terebra* (*Strioterebrum*) *melia*, and *Cancellaria balboae*.

In 1979, Columbia transferred this collection to the Department of Invertebrates, American Museum of Natural History, and then the story becomes interesting. When these lots were catalogued at AMNH, it was discovered that three specimens were missing and two specimens, those of *Strombina elegans* Li (= *S. turrita* Sowerby) and *Distorsio decussata*, were not the figured specimens of Li. This situation came to my attention when Dr. Peter Jung returned to the AMNH the *Strombina* collection he had borrowed in connection with his revision of *Strombina*-group species (published in 1989). Noting that Jung had figured the incorrect specimen of *S. turrita* as the holotype of *S. elegans* Li, I began to wonder if the correct specimen might possibly be in the Academy collection at Philadelphia. Consequently, I borrowed the ANSP lots of *S. elegans* (Sowerby, 1832) and *S. turrita* (Sowerby, 1832). I was delighted to find Li's figured holotype of his species named as *S. elegans* in the ANSP material, and proceeded to make the correct switch of specimens. Shortly after, while attending the Philadelphia shell show at the ANSP, I located the correct specimen of *Distorsio decussata*, and was able, with the approval of Dr. Gary Rosenberg, to make that transfer of specimens. Gary and I looked carefully for the missing specimens of *Arca* cf. *penneli*, *Phacoides liana* [= *Lucina centrifuga* Dall, 1901] and *Drillia zooki* [= *Compsodrillia alcestis* Dall, 1919], but without success. A success rate of 40% may not be betting odds, but in our line of work, that's a great success rate.

Speaking of *Strombina*, I recently had occasion to look up an obscure reference by Jousseaume, and was surprised to find the description of *S. terquemi*, a name with which I was not familiar, and which I learned had been missed by both Myra Keen and Peter Jung. I was able to borrow the figured holotype of Jousseaume, and it appears that this shell may represent a small specimen of *S. recurva* (Sowerby, 1832).

These small, none-the-less important, occurrences make my job as Senior Scientific Assistant AMNH both interesting and rewarding. I am sure other malacologists could relate similar experiences in their researches. One learns quickly to check all original references and, if possible, to borrow the specimens in question. Nothing solves a vexing question more quickly than being able to study the actual specimens. If you are a volunteer working with a major malacological collection, YOU may be the next to make an important discovery.

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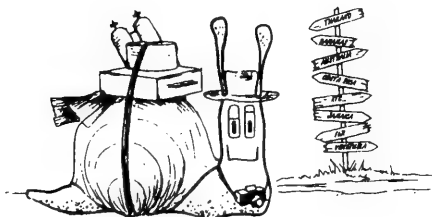
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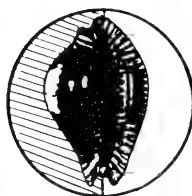
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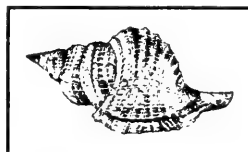


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QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 21, NO. 1

MARCH 1993



In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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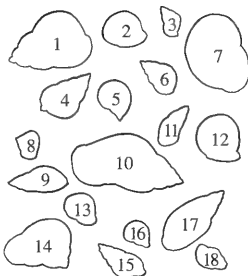
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COVER: Our cover this month, by well-known Florida artist Sharon Snyder, demonstrates vividly the colorful nature of land shells in a drawing Sharon rendered in a combination of pastels and colored pencils. An avid shell collector since she was very young, Sharon has had a special interest in land shells for almost 20 years, and has an extensive collection of them. A graphic artist by profession, Sharon does drawings of shells and sea life in her spare time, which is limited because of her very active involvement in the Central Florida Shell Club. Sharon does shell drawings by request; for more information, call (407) 898-4061 or write her at 2015 Vivada Street, Orlando FL 32803.



PRESIDENT'S MESSAGE

One of the Astronaut Trail Shell Club's hardest working members, Bobbi Cordy, made a number of suggestions to encourage participation of those "on the rolls" and to attract members. Her ideas were so pertinent to all clubs, and many of them also to COA, that I'd like to pass them along with a few embellishments of my own.

- *Don't ask for volunteers — you rarely get them. Ask a member direct, face to face.*
- *Try to have every (club) member take on some responsibility — even if it's just providing cookies for refreshments one month.*
- *Spread jobs around. Have a new person work with someone who's been here for years.*
- *Let people be creative and encourage new ideas — we don't always have to do it the same way.*
- *Form a telephone committee. Call inactive members, let them know they're missed, and encourage them to attend. Maybe they need a ride and are too shy to ask!*
- *Encourage members to bring in a small display, nothing fancy. Some clubs use a "shoe box."*
- *Involve members who are primarily interested in arts and crafts. Have them do a program or display.*
- *When a new member or visitor attends, make an effort to greet him, and introduce yourself and others. Make him feel WELCOME!*

We all have one BIG worry — Membership. Some suggestions involve spending money, which all clubs don't have. But most ideas just take some time and effort.

- *Put small ads in "little" papers, using shell art work and catchy phrases about your club, meetings, etc.*
- *Many newspapers have public service columns to announce club meetings. Radio and TV stations also make public service announcements.*
- *Make a sharp-looking flier and distribute to retirement-type communities, winter-visitor condos, welcome centers, chambers of commerce, schools, museums, science centers, etc.*
- *Let local clubs, churches, museums, etc. know you are available to do shell talks and programs.*
- *Set up an exhibit in libraries, schools, or wherever appropriate.*
- *Participate in local events, fairs, craft shows, Christmas parades, etc.*
- *Participate in events held by shopping malls. Can you set up a booth?*
- *If you have a shell show, set up a membership booth (for your club and COA). Show slides or videos of activities and field trips if you can. Do you have historical albums on your club? Have club members on hand to answer questions. Have shells people can pick up and handle.*
- *When you're shelling, talk to people — particularly if they are picking up shells! Tell them about your club. Or, if you're away from home, tell about the local club, and about COA. (I signed up a new member from Iowa while on a trip to Scandinavia.)*
- *Have an "open house" or party (Christmas, special event) and ask all members to bring guests.*
- *Encourage youngsters and couples with children. Maybe you could have a baby-sitter corner at your meetings. We need young people to step into the ranks to continue our existence.*

Undoubtedly, many clubs are already doing most of these suggestions. But sometimes a reminder doesn't hurt — and maybe there are a few ideas you can expand on.

Best wishes to all for a shelling good year!

DORIS

List of Shells Pictured:

1. *Auris bilabiata nigrilabris* Pilsbry, 1896 2. *Emoda sagraina* (Orbigny, 1842) 3. *Partula rosea* Broderip, 1832 4. *Helicostyla concinna* Sowerby, 1841 5. *Rhynchotrochus taylorianus* (Adams & Reeve, 1850) 6. *Papuina meta* (Pfeiffer, 1856) 7. *Acavus superba roseolabiat* Nevill, 1888 8. *Viana regina laevigata* (Pfeiffer, 1864) 9. *Bothriembryon fuscus* Iredale 10. *Porphyrobaphe iostoma* (Sowerby, 1824) 11. *Amphidromus floresianus* Fulton, 1897 12. *Helicostyla zonifera* (Sowerby, 1842). 13. *Helicostyla annulata* (Sowerby, 1841) 14. *Acavus haemastoma* (Linne, 1758) 15. *Amphidromus floresianus* Fulton, 1897 16. *Rhynchotrochus wiegmanni* (von Martens, 1894) 17. *Placostylus* (Aspastus) *miliocheilus* (Reeve, 1848) 18. *Farcimen* sp?

THE SANTA BARBARA ISLAND SHELLEDSLUG — WHO NEEDS IT?

by F. G. Hochberg

As we rush headlong into the decade of the environment, mankind is becoming increasingly concerned with the health of the planet and the impact of human activities on nature. The beauty of life is dependent on fragile ecosystems maintained by a diversity of plants and animals, including man, whose lives are woven together in a complex web of interactions.

In an attempt to preserve diversity and thus protect the environment, Congress enacted endangered species legislation in 1973. The Endangered Species Act established criteria to determine which species of plants and animals and which habitats are in immediate danger of extinction or are in critical need of protection. Museums, such as the Santa Barbara Museum of Natural History, play an indispensable role in monitoring the earth's natural resources and in describing and studying endangered, threatened, rare or unique species.

One of the best examples of an endangered species of invertebrate is the insular endemic Santa Barbara Island Shelledslug, *Binneya notabilis* (Cooper, 1863). The Shelledslug (previously called the Slug Snail) lives only on tiny Santa Barbara Island, one of five islands off the coast of California which are included in the Channel Islands National Park. Until the early 1970's the species was thought to be extinct. On Santa Barbara Island the distribution of live animals is restricted to the north facing slopes of two small canyons (Fig. 3), although dead shells are present in superficial deposits of subfossils in several locations on the island (Fig. 4). Empty shells are widely distributed on nearby San Nicholas Island. Although live animals have never been found, the species must have been common on San Nicholas Island in the not too distant past.

Studies by museum scientists in the late 1970's determined the total area of critical habitat on Santa Barbara Island to be about one acre and estimated the population to number only a few hundreds of individuals. The snail is so rare that it has been seen alive less than a half dozen times since first discovered in the early 1860's by James Cooper.

The shelledslug genus, *Binneya*, was named in honor of early American malacologist William Greene Binney. *Binneya* is placed in the

Family Arionidae and is related to other well known shelledslug genera such as the arion slugs (*Arion*), banana slugs (*Ariolimax*), jumping slugs (*Hemphillia*) and taildropper slugs (*Prophysaon*). In *Binneya* the shell is spiral and partially exposed (Fig. 5). The flat, ear-like shell is covered with a thick periostracum and is about 10-15mm long. When extended the living animal may attain a maximum total length of 40-60mm.

A related species, *Binneya guadalupensis* Pilsbry, 1927, is known to be widely distributed on Guadalupe Island off Baja California, Mexico. Roth has indicated that the internal anatomy of *B. guadalupensis* is quite different from *B. notabilis* although the shells are very similar. What may be a third species was found by Orcutt under maguey plants (*Agave shawii*) in the hills north of San Quentin Bay on the Baja California mainland. This latter species has not been collected since 1885.

During the dry months of the year the slug-like snails aestivate deep in the soil around the roots of native island plants such as the wild cucumber (*Marah macrocarpus*) and the morning glory (*Calystegia macrostegia*). Following seasonal rains the snails emerge briefly to feed and mate and then they reenter a resting stage to wait out the dry season. Juveniles aestivate at the surface, attached to the undersides of rocks. Adults, in contrast, aestivate at depths of 15-60cm inches in the soil. During this aestivation, the adult snail's body is contracted and covered with a paper-thin, white mucous secretion which dries and hardens into a tough, leathery epiphragm. If the epiphragm is unnaturally broken, the snail desiccates and dies within hours. During prolonged periods of drought the snails are thought to live for years without emerging or feeding. Lodged in one place and restricted in food and habitat, the species is remarkable for having survived to the present day.

The survival of the Shelledslug on Santa Barbara Island can be considered tenuous at best due to the snail's very restricted natural distribution. If extinction is a natural consequence of life, why worry about losing an obscure species of snail few people have seen or even care about? Snails, especially land snails, do not have the same appeal as

(continued on page 4)

EDITORIAL

It has been five years since an issue of *American Conchologist* was devoted to the land shells. The interest and response to that issue (March 1988, Vol. 16, No. 1) was gratifying. When Lynn Scheu broached the subject of another land shell issue, and asked me to help edit the issue, I did not have to think about my answer — yes!

The importance of studying and understanding the terrestrial mollusks should go beyond an aesthetic interest — it should also focus on ecological issues. Claims of habitat destruction and loss of flora and fauna are echoed in the media daily. The continued loss of tropical rain forests and other terrestrial environments will undoubtedly extinguish many species of land mollusks, as well as other life forms. We may lose many of these species before their identity and relationship to the ecosystems they inhabit are understood.

We as conchologists can be an influence in helping protect our environment while still enjoying the molluscan fauna we study and collect. We can also be our own worst enemy by ignoring our responsibility to the environment. Those in a position to write laws preventing the collecting of the flora and fauna should not receive the impression that the conchologist, in our case, is the culprit in the continued extinctions. Responsible sampling of the molluscan fauna by no means will bring a species to the brink of extinction. Destruction of the environment certainly will.

In this issue Eric Hochberg's article on an indigenous species of snail slug from Santa Barbara Island points out the importance of snails as indicators of how we are impacting the environment. COA Grant Award Winner Sharon Kobayashi of the University of Hawaii focuses on the Hawaiian Achatinella, the only genus with all species protected on the endangered species list. There are articles on Somalia, on Japanese Clausiliidae, on the Amphidromus of Southeast Asia, and one on land shell literature by Leonard Richardson.

Another five years will not lapse before we see more articles on the terrestrials. Promised for future issues are articles by Dr. Harry Lee on the fascinating operculate land shells of Sarawak and Borneo, and Dr. Barry Roth, one of today's leading researchers on American land shells.

I would like to thank the many people who have helped with information and resources necessary in pulling this issue together: in particular Dr. Hank Chaney of the Santa Barbara Museum of Natural History, John Timmerman, Am. Conch. art director, Sharon Snyder for the cover that graces this issue, and of course, the contributors and authors. A special thanks goes to Lynn Scheu to whom I am indebted for her advice on content and writing style. Happy reading,

Rich Goldberg

THE SANTA BARBARA ISLAND SHELLED SLUG — WHO NEEDS IT?

(Continued from page 3)

elephants, whales, condors, redwood trees or even butterflies. Yet species such as the Santa Barbara Island Shelledslug are as intimate a part of this world, and are as indispensable as larger, more visually glamorous and emotionally attractive animals and plants. Once a species has been lost it will never return, nor are we knowledgeable enough to predict the impact of removing a single link, however small, from the fragile, interdependent web of life.



Fig. 1. Photograph of a live Santa Barbara Island Shelledslug on a leaf of wild cucumber. [Photo by F.G. Hochberg]

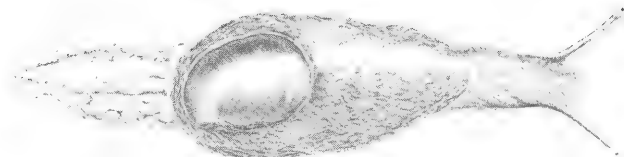


Fig. 2. The Santa Barbara Island Shelledslug, *Binneya notabilis*, an endangered species of endemic land snail found only on Santa Barbara Island in the Channel Islands National Park. [Drawing of live snail by Jamie Calhoun]



Fig. 3. Small canyon on Santa Barbara Island showing vegetation differences on north facing slope (left) versus south facing slope (right). The Shelledslug lives only on the north facing slope in this canyon. [Photo by F.G. Hochberg]

Much of what has happened to the recent environments of the world can be directly or indirectly attributed to destructive human activities. The ultimate value of snails like *Binneya* may be to serve as indicators of the overall health of the habitats in which they live. By protecting the continued existence of small, obscure species, we contribute to the preservation of broader ecosystems in which we all live. Conservation goals of this sort benefit mankind by helping us to define our destiny.

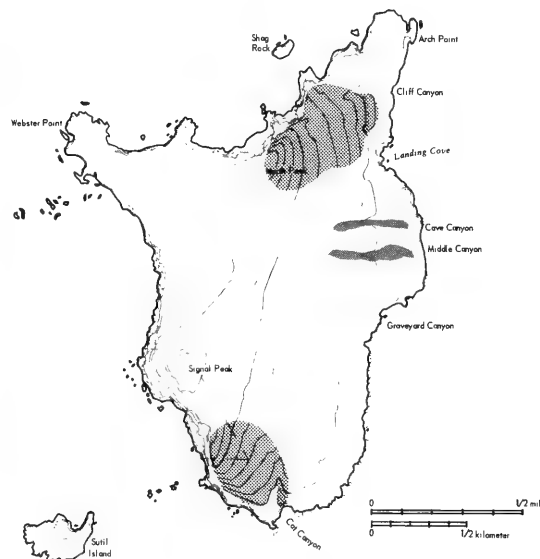


Fig. 4. Map of Santa Barbara Island showing the restricted distribution of living Santa Barbara Island Shelledslugs (dark crosshatching) and the distribution of dead shells in surface deposits of fossils (light stippling).

Fig. 5. Shell of Santa Barbara Island Shelledslug. [Drawings by Jamie Calhoun]



A. Embryonic shell at time of hatching;



B. Adult shell.

VARIATION IN THE AMPHIDROMUS

by Richard L. Goldberg

The *Amphidromus* comprise over 80 species ranging through Southeast Asia. It is not surprising that more than 300 names have been applied to the *Amphidromus*. This popular group of pulmonate land shells exhibit a tremendous amount of diversity in color, pattern and form.

Members of the genus have been divided into three subgenera, *Amphidromus* sens. str., *Syndromus*, and *Goniidromus*. A number of species of *Amphidromus* s.s., are normally amphidromine, coiling either to the left or right in the same population, a phenomenon seen in very few non-marine genera. The subgenus *Syndromus* includes species that are exclusively left-coiling, or sinistral. The three closely associated species of *Goniidromus* are rare high-elevation species from Sumatra and Annam. Little is known about the members of this subgenus, and only a handful of specimens have been recorded.

The *Amphidromus* are found as far west as Assam, India and eastward through Indonesia to Timor, Banda Island, and Tenimber Islands. The greatest number of *Amphidromus* have evolved in the Malay subprovince of Indonesia, where many species display an endless variety of colors and patterns.

In certain species, variability is the key word. For example, particular populations of *Amphidromus* (*Syndromus*) *contrarius* form: *nikiensis* are so polymorphic that almost no two seem alike (Figure 1). The form is limited to the west end of the island of Timor, Indonesia.

Another extremely variable species inhabiting Timor is *Amphidromus* (*Syndromus*) *reflexilabris* form: *hanielianus* Rensch, 1931. This unusual species has a reflexed lip (Figure 2), and exhibits almost as much variation as the previous relative. Specimens of different colors and patterns are found completely mixed in individual populations of these two species.

On Balabac Island and surrounding islands of the southern Palawan province, Philippines, *Amphidromus* (*Syndromus*) *quadras* take on a myriad of colors and patterns. Close to 30 names have been applied to these color forms. Unlike the previous two species, a number of the *quadras* forms do not mix geographically, but inhabit closely overlapping populations. In a large series, though, they show a continuous blending of characters. Yellow seems to be the predominating color in this species, often with green or brown flammules on the spire, and bands or streaks on the last whorl (Figure 3).

The extreme variation found in many species of land shells points out the importance of field researchers to record accurate and detailed locality and habitat data. This information will facilitate identification, and the tendency to create names for color forms and variations, hopefully, will decrease.

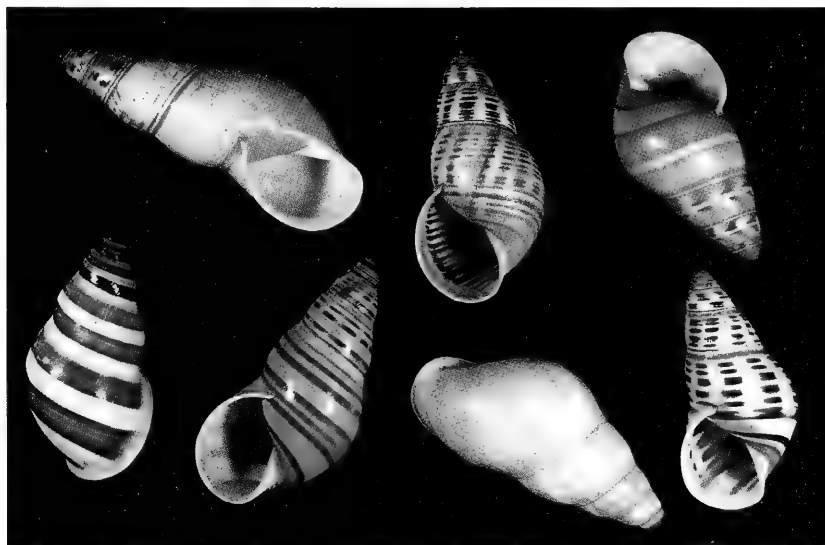


Figure 1: *Amphidromus* (*Syndromus*) *contrarius* form: *nikiensis* Rensch, 1931 — Niki Niki district, west Timor Island, Indonesia; on kapok trees; 30-38mm. [photo by Richard Goldberg]

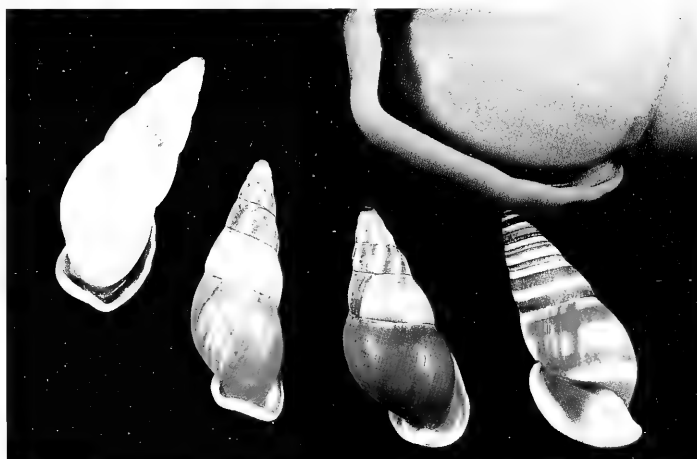


Figure 2: *Amphidromus* (*Syndromus*) *reflexilabris* form: *hanielianus* Rensch, 1931 — Amanuben Tengan District, west Timor Island, Indonesia; on low bushes. 40-46mm. [photo by Richard Goldberg]

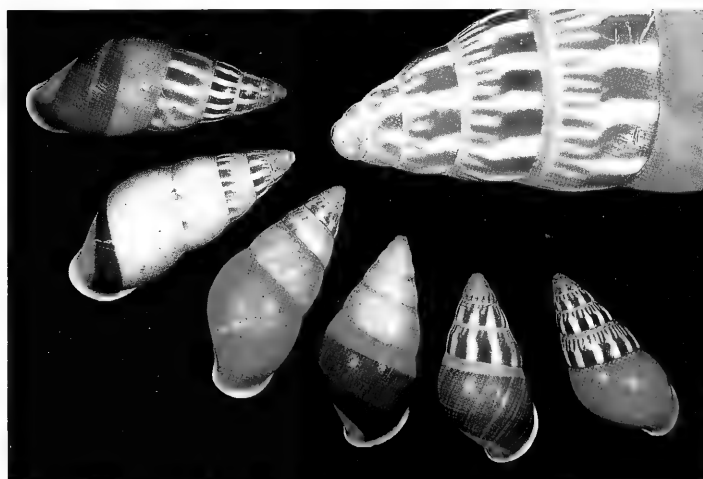


Figure 3: *Amphidromus* (*Syndromus*) *quadras quadras* Hidalgo, 1887 — specimens referring to forms *versicolor* & *dubius* both Fulton, 1896; from Balabac Island, southern Palawan province, Philippines; 36-44mm. [photo by Richard Goldberg]

MEGALOBULIMUS OBLONGUS IN THE CARIBBEAN

by Richard L. Goldberg

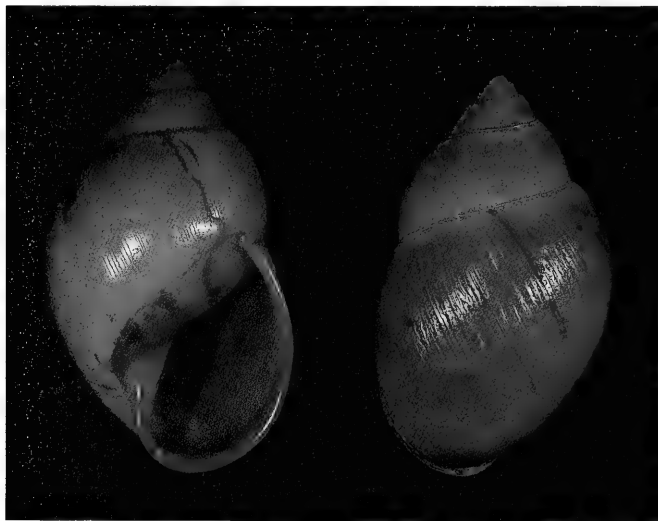
The large terrestrial pulmonate, *Megalobulimus oblongus* (O.F. Muller, 1774) has a wide distribution in South America where it varies considerably through its range. It is also considered indigenous to the islands of Trinidad and Tobago, and has been introduced by man to a number of other Caribbean islands. The earliest reports of *M. oblongus* in the Caribbean date back to Solander on the island of St. Vincent in 1786.

On the island of Trinidad, a typical form occurs with a brownish-tan shell and rose-red lip. On the island of Tobago, the typical form is replaced with an albino form, having a pure white shell with a yellowish periostracum, and **lacking** the characteristic rose-red to pink lip. This Tobagan population seems to be an insular geographical race, whereas the handful of recorded pure white specimens from the mainland seem to be simply aberrant specimens among typical populations. Pilsbry described the Tobago forms as variety *tobagoensis* in 1895, which is a synonym of *M. oblongus albus* (Bland & Binney, 1872).

On Barbados, a typical form of the species inhabits gardens and cultivated areas of the island. Bland (1862) reported the introduction of this species to Barbados from St. Vincent by the Rev. J. Parkinson. It is now well established on Barbados.

On St. Vincent it lives in open areas of secondary growth up to 1,000 feet above sea level, usually under wet leaf litter. Smith (1895) reported that the introduction of this species on St. Vincent may date back to the early Indian inhabitants who brought them as a food source from the mainland of South America.

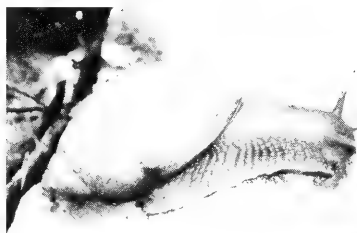
P.O. Box 409, Simpsonville, MD 21150-0409



M. oblongus - typical specimen with red lip from Barbados, W.I.; 88mm. [Photos by Richard Goldberg]

On Grenada it is reported in habitats similar to St. Vincent. In 1895 Herbert H. Smith stated, "the species is difficult to find, as it conceals itself under rubbish, etc...". It has also been introduced to St. Thomas, Antigua, St. Kitts and St. Lucia, but it is not known whether these populations still exist today.

The earliest report of *M. oblongus* on Jamaica dates back to Chemnitz in 1786, but his findings were not confirmed until 1928 by Dean and Ford (1945). The species is well established in the Kingston area. Specimens from Trinidad were introduced in the Montego Bay area in 1938 (T. Pain, persn. comm.), but seem not to have survived in this location. I found a colony of *M. oblongus* in a water valve trench of a home in a north Kingston suburb in 1988. There were at least six specimens in this trench which was covered by a metal plate. The property owner, Audrey Wiles, told me that they crawl around at night and during wet weather periods, but that otherwise they stay buried or in the trench. With further searching, I found many more specimens in shaded areas under foliage. Members of the *Megalobulimus* are known to bury themselves in soil during dry periods. The Jamaican specimens are typical of the species, but tend to be smaller in size. In general, the Caribbean populations tend to have thinner shells and to be slightly smaller than the typical mainland South American forms.



Megalobulimus oblongus (O.F. Müller, 1778) - Kingston, Jamaica; shell with living animal over 9 inches long.

Water valve trench where *M. oblongus* was found.



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HELP!

March is the month to imagine lying on the "World's Most Beautiful Beaches" at the Edgewater Beach Resort at Panama City, Florida. If that doesn't tickle your fancy, how about snorkeling or diving those waters searching for nature's treasures, and attending programs that will tell you more about these fascinating creatures. Hundreds of people are doing just that — planning to spend July 11-17 at the 1993 Convention — "COA Comes Of Age."

For COA to continue its educational grant program we need your assistance. We need donations from COA members for the auction, silent auction, raffle and door prizes. Items for the auction should be fine specimens with full data. Silent auction items vary in value but should be of good quality. Door prizes are usually valued

at about \$5.00. For variety it is beneficial to have shell-related items as well as shells, so all types of donations are needed.

Donations should be sent to Linda and Jim Brunner, P.O. Box 8188, Southport, FL 32409. We request that all donations be sent so that they arrive on or before June 15, 1993, so that you can receive proper recognition in the convention program, and the auction list may be prepared. We appreciate any help you can give us with these activities.

So, as the north wind blows and the cold rain falls, close your eyes and imagine COA in July at Panama City Beach. It is guaranteed to warm your heart, if not your feet. Do not miss "COA Comes Of Age"! We look forward to your participation in all activities.

LATIN 102

by Emilio Garcia

Now we've mastered Latin pronunciation as elucidated in **Latin 101** (December 1992); and, awkward though our tongues yet feel at Latin in our mouths, we may rest assured that practice will make us all comfortable with the sounds. Now, we're ready to move on to the next step in mastering conchological Latin.

Agreement between the genus and the species:

Whatever our attitude toward the pronunciation of scientific names may be, we should certainly look at one rule of Latin grammar more seriously, and that is the gender agreement between the genus (or subgenus) and the species (or subspecies). It is important if we want to keep accurate labels for our collections, and it is important if we enter displays in shell shows. It is also important when we order from dealers' lists, since sometimes there is a significant difference between a "general" and a more precise scientific name, e.g., *Murex anatomicus* vs. *Homalocantha anatomica*.

There is a group of specific endings that belong to the genitive (possessive) case; in other words, they show possession. These endings are well-known and easy to remember; and since they remain constant, one has nothing to worry about from genus name to genus name. They are: **-i** (for the masculine), **-ae** (for the feminine) and **-orum** (a plural ending usually meaning "the family of"). Thus we have such names as *Conus poormani*, the cone belonging to Poorman or "Poorman's Cone," *Siratus carolynae* or Carolyn's Murex, and *Conus sennottorum*, or the Sennotts' Cone. Some of the masculine genitives of early names, such as *Conus adamsonii* Broderip, 1836 and *Conus cumingii* Reeve, 1848 have a double "i."

Most specific names, however, are in the nominative case. If they are nouns, they join with their genus name, also a noun, to form compound nouns — for example, *Cypraea cervus* or "deer cowry." If they are adjectives, they modify the noun (that is, the genus) — for example, *Cancellaria oblonga*, or Oblong Nutmeg. If the specific name is a noun, there is no agreement necessary, and so no change in the specific ending, because the name itself carries its own gender, as do all nouns. That is why you have *Conus cervus* and *Cypraea cervus*, although the genus *Conus* is masculine and the genus *Cypraea* is feminine; or *Vexillum (Pusia) puella* = girl and *Pusia puella*, although *Vexillum* is neuter and *Pusia* is feminine. If a specific name is an adjective, however, then it will have to be made to agree in gender with the genus (or the subgenus, if that is what is being used).

*135 Oak Crest Drive, Lafayette, LA 70503

Latin nouns are either masculine, feminine or neuter. The adjectives (for our malacological usage, species names) that modify those nouns have to agree in gender and number with them. This concept is rather difficult to grasp for English speakers who have no experience with other languages, because it is equivalent to saying "reds roses" or greens pastures." A specific name, of course, will always be in the singular, since generic names are all singular, but when it is an adjective it will have to adopt an ending to agree with its genus. In most cases, these specific endings are **-a**, if the genus is feminine; **-us**, if the genus is masculine; and **-um**, if the genus is neuter. And so we end up with such end changes as *Conus cinereus* = Ashy Cone, but *Cypraea cinerea*, or *Turbo (Lunella) cinereus* vs. *Lunella cinerea*. There is a small group of adjectives that deal with geographical areas that belong to another declension. These would have the endings **-ensis**, for the masculine and feminine, and **-e**, for the neuter; e.g., *Conus* (masculine) *brasiliensis*, *Chione* (feminine) *californiensis* and *Buccinum* (neuter) *polare*.

On many occasions, species that for years were thought to belong to one genus are changed to a genus of a different gender; in that case, the specific name, if it is an adjective, will have to reflect that change in a new ending. For example, in 1796, Lightfoot described a species as "*Buccinum*" *taurinum*. Today we all know the species as *Terebra taurina*, but even now, we can still find *Terebra taurinum* in a number of popular publications — the author has respected the change in genus, but has failed to make the corresponding change in the species name.

At times the gender of the genus or subgenus is not only not obvious but also unexpected, as is the case of *Distorsio*. The word appears to be masculine because it has a masculine ending, **-o**, but it is actually a feminine noun. The result is that you end up with *Distorsio clathrata*, *Distorsio constricta*, etc. Many other common genera such as *Venus*, *Chlamys*, etc. are also feminine. So what do we do if we do not want to go through the trouble (or expense) of buying Latin and Greek dictionaries? The practical thing to do is to look in a reliable publication such as a scientific book or monograph for any specific name (so long as it is an adjective) belonging to the genus (or subgenus) in question. Its ending should tell you the gender.

The only problem is that there are many publications, even "scientific" books, that have failed to make the agreement between noun and adjective. Oh well... forget I said anything.

WHAT IS IT???

Hooray! An answer, at last. When we began this column, we thought we'd have lots of answers concerning our mystery shells' identities, but not so. Answers have remained as rare as live cowries in Alaska. Until now, that is. Rich Goldberg sends us both an answer and a new mystery shell. Landshell, of course. He also says that he suspects the little landshell of Dieter Cosman's that's shaped like a hornet's nest with an exit tube (p. 9, lower right corner, December, 1992) is new to science.

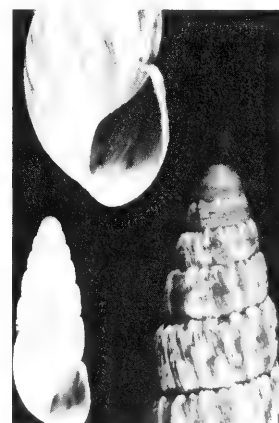
In response to my note and picture of the Indonesian Ariophantid (**Am. Conch.** Vol. 20, No. 4, p. 9; December 1992), Dr. Artur Roll of Germany writes to me, "You may find the land snail from Sulawesi being *Hemiplecta wichmanni* P. & F. Sarrasin, 1899. These snails are common in the Toradja region of Sulawesi. I have some, although with a brown color underneath, and it seems to me your photograph shows the same." The shell I illustrated actually has a pure white shell underneath a flaky green periostracum. Thus the coloring of this species must vary a great deal.

Dr. Roll used **Indonesian Shells II**, by B. Dharma to find a name for this species, which proves that we should never overlook the most accessible references when trying to identify an unnamed species. Many

thanks to Dr. Roll for his keen eye and interest in the terrestrials.

The intriguing Bulimulid-like species at the right is from the Nullarbor Plain in south Western Australia, where it was found under limestone rocks. It was sent to me as *Bothriembryon* sp. with a note saying this could represent a new genus and well as species. The shell averages from 14-17mm in length, has a grayish-white base color and has irregular light- to medium-brown streaks. The sutures are deep and crenulate. The lip is simple and unexpanded. The umbilicus is scarcely perforate. If you know of any publications or descriptions dealing with this species, please drop us a note.

Rich



WEST MEETS EAST - Henry Pilsbry And The Clausiliidae of Japan

by Richard L. Goldberg

The malacological career of Henry Pilsbry is nothing short of amazing. The most prolific writer of malacological literature the world has ever known, he described over 5,600 species. George Tryon brought Pilsbry to the Academy of Natural Sciences in Philadelphia in 1887, where he worked at the Academy for 70 continuous years until 1957. A great anatomist, Pilsbry was the first to move beyond conchology, to form the field of malacology in the United States. He combined the study of the shell with detailed comparative anatomy to form systems of classification based upon his work.

Pilsbry's four-volume **Land Shells of North America** (1939-

1948) is the standard reference for the land shells of this region; he also published numerous important papers dealing with the land shells of South America. His work on volumes 5 through 28 of the second series of **Manual of Conchology** between 1889 and 1935 is unequaled, and stands as one of the most important series illustrating and revising the pulmonate land shells. Pilsbry was 72 years old when the Academy ceased publication of the **Manual**.

The Clausiliidae were not covered in the **Manual** due to Pilsbry's lack of European material. He did study the Japanese Clausiliids in depth though. Pilsbry had a special interest in the land shells of Japan and

JAPANESE CLAUSILIIDAE:



Plate 1

1. *Luchuphaedusa ophidoon* Pilsbry, 1905 — Shimokoshiki Island, Koshiki Islands, Kagoshima prefecture; 15mm. With close-up of aperture detail.
2. *Luchuphaedusa una* Pilsbry, 1902 — Saikai-cho, Nagasaki prefecture; 20mm. With close-up of aperture detail.
3. *Megalophaedusa mitsukurii* (Pilsbry, 1902) — Hikigawa, Wakayama-ken; 31mm.
4. *Proreinia eastlakeana vaga* (Pilsbry, 1909) — Amami-Oshima Island; 10mm.
5. *Megalophaedusa martensi tinctilabris* Pilsbry, 1902 — Nachi Shrine, Wakayama prefecture; 45mm.
6. *Luchuphaedusa nesiothauma* (Pilsbry, 1901) — Amami Island; 32mm.
7. *Hemiphaedusa* (*Pinguiphaedusa*) *hakonensis* (Pilsbry, 1900) — Jorennotaki, Izu, Shizuoka-ken; 30mm.

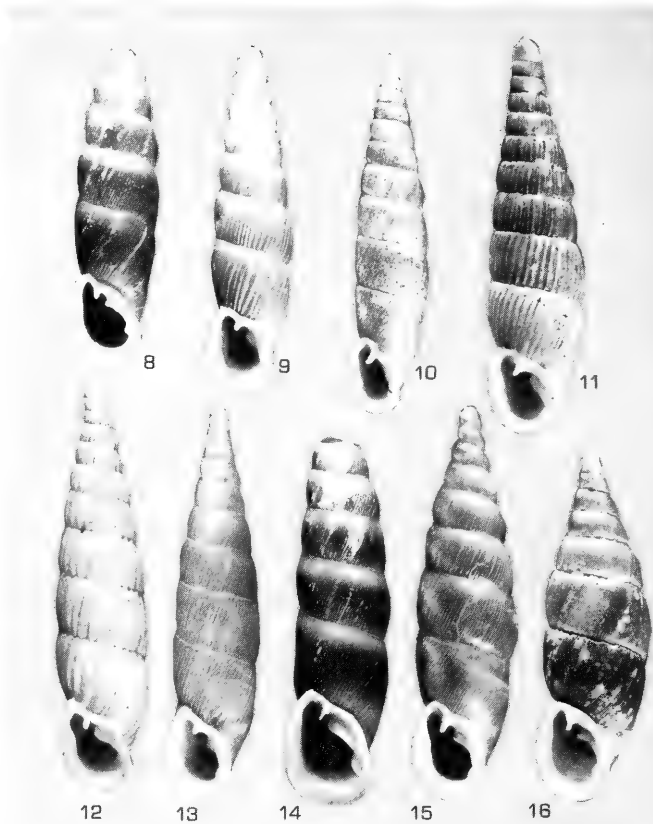


Plate 2

8. *Stereophaedusa striatella* Pilsbry, 1901 — Miyako Island, Okinawa; 23mm.
9. *Mesophaedusa hiraseana* Pilsbry, 1901 — Okino-shima, Kochi prefecture; 28mm.
10. *Mundiphaedusa rhopalia* (Pilsbry, 1902) — Tenryu-city, Shizuoka prefecture; 24mm.
11. *Vastina* (*Mesophaedusa*) *hickonis mikawa* (Pilsbry, 1905) — Toyohashi-city, Aichi-ken; 21mm.
12. *Luchuphaedusa inclyta* (Pilsbry, 1908) — Okinawa; 28mm.
13. *Nesiophaedusa okinoerabuesis* Pilsbry, 1905 — Okinoerabu Island, Kago-shima prefecture; 26mm.
14. *Stereophaedusa* (*S.*) *valida*, variety: *perfasciata* (Pilsbry, 1901) — Ogimi-son, Okinawa Island; 28mm.
15. *Stereophaedusa nugax* Pilsbry, 1901 — Yaku Island, Kagoshima prefecture; 16mm.
16. *Stereophaedusa stereoma* Pilsbry, 1901 — Yaku Island Kagoshima prefecture; 27mm.

adjacent regions, and produced over 60 papers on the subject, a number of them jointly written with Mr. Yoichiro Hirase between 1902 and 1909. His close association with Hirase enabled him to describe a multitude of Japanese species including Clausilids, about which he stated in 1900, "The Japanese fauna is proving very prolific in Clausilias, and may yet rival the richer portions of Eastern Europe in degree of specific differentiation." In 1901 Pilsbry wrote, "Ninety-three well-established species of Clausilia are now known from Japan, more than half of them first described in this journal (**Proceedings of the Academy of Natural Sciences of Philadelphia**). Of this number, forty-four were brought to light by Mr. Hirase...In addition to these species, thirty-five subspecies or varieties have been described." Pilsbry and Hirase's association also went beyond land shells; many marine species were described, including *Pleurotomaria hirasei* by Pilsbry. But his first love was the land shells.

Pilsbry created many genera to classify the diversity of Clausilid species. Those unfamiliar with the study of Japanese and Southeast Asian Clausiliidae may find the genus names amusing — names like *Zaptyx* (Zap-ticks), *Hemizaptyx* (Hemi-zap-ticks), *Tyrannophaedusa* (Tie-rano-fay-dusa), and *Luchuphaedusa* (Luchu-fay-dusa), among others, brought an order to the extreme diversity of the Clausiliidae of this region.

The Clausiliidae number around 3,500 species, in six subfamilies, and have a fragmented distribution. The fossil records suggest that the Clausiliidae have their origins in the Middle East. The population centers are South East Asia with the greatest number of species, then Europe

including North Africa and the Middle East, and finally South America, the latter with a mere 130 recent species. Current researchers of Japanese Clausiliidae determine between 180 and 195 living species and subspecies there to be valid. The family is characterized by a turreted or fusiform shell, with some or many folds in the aperture — often with an odd lid resting on and between the folds, called the **clausilium** (*claudo*=to close).

Illustrations of Japanese Clausiliidae described by Pilsbry are scattered throughout the literature. The species pictured here represent just a handful of the many unusual Clausilids endemic to the islands of Japan.



Henry Pilsbry at work at the Academy of Natural Sciences, Philadelphia; photo from *The Pilsbry Nautilus*, 71 (3) Plate 5.

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OUR COA CLUBS — A CLOSER LOOK

by Nancy Gilfillan

The San Diego Shell Club

The San Diego Shell Club was founded in 1961 and has been continually active ever since. The club is operated exclusively for educational and scientific purposes and, more particularly, to enjoy, promote the study, and further the conservation of Mollusca and associated marine life, not only by lectures and club meetings, but also by field trips.

The club holds nine program meetings yearly on the third Thursday of the month in room 104 of the Casa del Prado in San Diego's Balboa Park. Meetings begin at 7:30 p.m.; programs are presented by invited speakers and followed by refreshments and a social time. There are three social events each year: an auction/potluck in April; a garden party in September; and a Christmas dinner party.

Membership in this club averages 130 people and institutions and is varied, including beginning collectors, advanced amateurs and scientists, divers and underwater photographers, and dealers. Club members donate time as associates in various museums, such as the San Diego Museum of Natural History, the Los Angeles County Museum of Natural History, and the Santa Barbara Museum of Natural History. They also act as guest lecturers at schools, senior centers, and other scientific organizations. In addition, volunteers participate in scientific projects and expeditions.

During 1991, the San Diego Shell Club initiated the Marine Field Study, a new project the purpose of which is to provide a repository for photographs of living mollusks and field observations which can then be available to both amateurs and professionals alike. This should prove to be of invaluable service to us all.

The club also has a fine circulating library, which includes a growing selection of videos made of club programs, available to all members. Unlike the books, the videos may be borrowed by out-of-town members. They may be borrowed for one month for a fee of \$3.00 to cover postage and handling and a deposit of \$25.00 which will be returned upon prompt receipt of the rewound video.

Membership dues are \$12.00 (domestic), \$15.00 (overseas, surface mail), and \$30.00 (overseas, air mail). Monies raised from membership dues and the auction/pot luck are the primary source of revenue for operating expenses and club projects, such as donating to scientific publications and museums, as well as lending its support to the Greater San Diego Science Fair since 1972 by awarding prizes in the category of marine life. It has also offered occasional student grants such as the Anthony D'Attilio grant as well as contributing to the Western Society of Malacology Student Grant.

The Festivus is the peer-reviewed publication of the club, which has published it continuously since 1970. It is distributed world-wide to both members and member institutions as well as on an exchange basis. **The Festivus** publishes 11 months a year and also on occasion publishes supplements on specific scientific subjects. (For a more in-depth article on **The Festivus**, see the September 1992 issue of *American Conchologist*.)

It is obvious that this club has a marvelous mix of members and activities and can offer rich and varied experiences to those lucky enough to be able to participate. If you wish more information, contact the San Diego Shell Club at 3883 Mt. Blackburn Avenue, San Diego, CA 92111.

SOME LAND SHELLS FROM SOMALIA, EAST AFRICA

Text and photos by Richard L. Goldberg

As conchologists, our travels and collections take us to far-flung locales around the world. The famine- and war-torn country of Somalia, the focus of world attention for many months, is a country that few of us will have the opportunity to visit. Thus I think it timely and interesting to take a brief look at the zoogeography, and a few of the non-marine mollusks that inhabit Somalia. (The ecological habitats discussed here are based on information published earlier this century). —R.G.

The arid, low-lying plains and hills of Somalia would, at a glance, seem an unlikely environment for any terrestrial molluscan species to survive. Drought, civil war, and destruction of the arid steppe and scrub land are factors which would seem to make inevitable the extinction of the indigenous flora and fauna. Since the majority of the country is arid and lacking in the humus and rotted-leaf ground cover that harbors an abundance of smaller species in other areas of the world, it is surprising that up to 90 species have been reported from this region, many of them small.

The Somali Republic as it exists today (the combined former British and Italian Somalias) contains several distinct climatic and environmental regions. Geologically, the entire country is a calcareous plateau, reaching more than 1500 meters above sea level in the north along the Gulf of Aden. At these higher elevations woodlands, pastures and stretches of vegetation extend almost to the lower-elevation valleys at the southern end of this zone. Central Somalia where the country bends southward near the ocean is less elevated, and is extremely arid and dry. The plateau descends gradually towards the south, where a more fertile environment exists around the Webi Jubba (Giuba) and Webi Shabeelle (Uebi Scebeli) Rivers (webi = streams). The vegetation-poor coastal dunes and alluvial plains are replaced here by pastures, savannah, steppe, and woods; along the rivers, a gallery forest flourishes, changing to mangrove woods near the river mouths, with temporary or permanent fresh or brackish ponds and lakes. The plateau ends abruptly at the ocean just south of Jilib.

The coastal line of Somalia north of this fertile area is devoid of any significant vegetation because of wind-drifted sand dunes. Inland from the ocean lies a broad coastal plain which is sandy or alluvial, chalky and sedimentary. Yet to the north near the coastal town of Obbia (Hoby), sparse woodlands can be found interspersed with the dunes.

There are distinct differences in the terrestrial molluscan fauna of the north and south. The mollusks of north and central Somalia have some association with those of western Asia, whether by an ancient continental connection of the two land masses, or (of lesser impact) through introduction by man. In the south, a central African influence is evident. There seems to be

no natural barrier besides climactic change to cause this transition.

Members of the operculate Family POMATIASIDAE, which have a strong presence on the island of Socotra off the northern coast of Somalia, are represented here by a few widely distributed species. Though the land is arid, the pomatiasid *Revoilia* can be found among scrub on sand dunes. *Revoilia* (*Socotora*) *guillainopsis* (Bourguignat, 1882) is one of the more prominent species, with a wide range from Ethiopia east to Mogadishu, the capital of Somalia. The purple/reddish to orange spire and dirty white base coloring are distinguishing features of this sand dweller. The umbilicus may be either open, or partially or totally closed by the columellar lip, and often traps sand inside the umbilicus as the shell develops (Figure 1).

Members of the large ACHATINIDAE are represented only south of Obbia (Hoby). *Achatina* (*Lissachatina*) *fulica rodatzki* Dunker, 1852, is a localized white shell form with an olivaceous yellow periostracum. It is associated with the dry or semidesertic lowland areas of Somalia and Kenya. The rarer *Achatina* (*Lissachatina*) *lactea* Reeve, 1842 is differentiated from *A. fulica* by the chalky outer surface, and by the coarse beaded sculpture on the upper part of the whorls. *Archachatina* (*Tholachatina*) *stefaninii* (Connolly, 1925) is the rarest of the Somali *Achatina*. It differs from the two previous species by its slender shape, smaller size, obtuse apex and oblique suture line. In addition, two species of *Limicolaria* and one *Limicolariopsis* are recorded.

The Genus *Trochonanina* is represented by a number of species in the south, but does not range into the northern Somali region.

Trochonanina (*Bloyetia*) *peliosstoma* Martens, 1882 is a variable endemic urocyclid with a range through the southern region from El Bur, south to Mogadishu, Bur Acaba, Brava and Bardera. The aperture of *T. peliosstoma* is blackish-blue; the shell is grayish-white, with or without a pattern on the upper whorls. It often has a heavily malleated base. A number of Urocyclidae species inhabit the southern region.

River and pond fauna are represented by a number of wide-spread prosobranch species and freshwater bivalves. The cosmopolitan *Melanoides tuberculata* (Muller, 1774) is conspicuous among them. The sinistral viviparid snail *Lanistes carinatus* (Olivier, 1804) ranges from the Nile River in Egypt south to Uganda, and is found in the Jubba and Shabeelle Rivers and associated ponds in Somalia. *Pila speciosa* (Philippi, 1849) and *P. wernei* (Philippi, 1851) are represented in the south also. *Neritina natalensis* Reeve, 1855, of the Jubba River, is the only nerite found in Somalia.

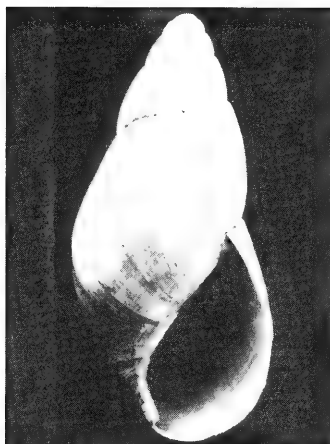
The information and species discussed here represent only a small part of the knowledge scattered through the literature. The smaller and micro species are not well known. Granted, there has been no serious collection of Somali land shells made in many years. A great deal needs to be learned about how recent climatic and man-made conditions have altered the terrestrial molluscan fauna of Somalia.

Acknowledgements: I would like to thank Lynn Scheu for her help in translating some critical documents, and also Marco Ursino of the Italian Communications Network (ICN) for some additional translations.

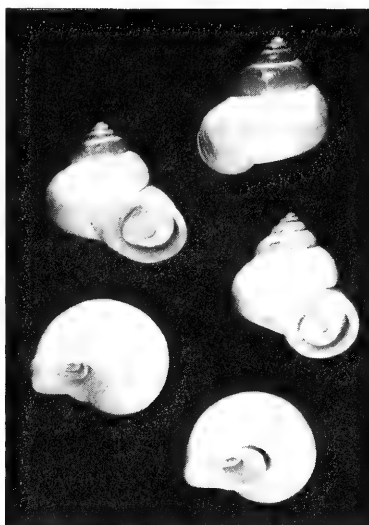




Lanistes carinatus (Olivier, 1804) — Uebi Scebeli, Somalia. 55mm.



Archachatina (Tholachatina) stefaninii (Connolly, 1925) — Holotype from Connolly (1925).



Revoilia (Socotora) guillainopsis (Bourguignat, 1882) — Mogadishu, Somalia. Note the open and closed umbilicus. 25-28mm.



Achatina (Lissachatina) fulica rodatzki Dunker, 1852 — Mogadishu, Somalia. 40 & 100mm.



Trochonanina (Bloyetia) peliostoma Martens, 1882 — Mogadishu, Somalia. 20mm. A darkly patterned specimen.



Pila speciosa (Philippi, 1849) — Uebi Scebeli, Somalia.



Achatina (Lissachatina) lactea Reeve, 1842 — Mogadishu?, Somalia. 74mm. Note granular sculpture.

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JAMBOREE '93

What a Memorial Day Weekend Florida shellers have in store for themselves! The 1993 Suncoast Conchologists Sheller's Jamboree, is returning this year to the Knights of Columbus Hall in Largo, May 29-31, complete with all the shellomania that event traditionally entails.

Old favorite shelly activities will be back — the Sell-Or-Swap Shell Market, the Shell Auction, Single Specimen Shell Show, Shell Measuring and Shell ID Clinic, Banquet, raffles, prizes, special guests, and of course the Parade of Snails! And there'll be a Marine Biology Cruise up the Intercoastal Waterway. Registration (prior to May 1) is only \$60, which includes the boat trip, four meals and the banquet.

Prospective attendees should contact the Suncoast Conchologists as soon as possible. Registration forms will be available after March 1.

DATE CHANGE FOR JACKSONVILLE SHOW

The 1993 Jacksonville Shell Show will move to an earlier date this year. It will be April 24 and 25, in conjunction with "Opening of the Beaches," a big weekend at Jacksonville Beach, with large crowds likely. The location has been changed as well. It will be ten blocks west of the old location in a newly renovated shopping center. The old location, the Flag Pavilion, is closed. For information on the show, contact Judy Blocker, President, Jacksonville Shell Club, 102 S. Magnolia Street, Neptune Beach, FL 32266.

The following article, by Harry Lee, first appeared in the Jan.-Feb 1990 Jacksonville Shell Club *Shell-O-Gram* [Vol. 31:1]. It had been preceded by several articles on the subject of land snail collecting, and so is rather in medias res, as it appears here. Originally, it was also augmented by illustrations of seven of the various species collected, maps of the collecting area, and a very complete and heavily annotated species list of snails collected. Space prevents our reproduction of the article in its entirety, so we here reproduce the text alone in the belief that it is worthy advice and encouragement to novice collectors of terrestrials. —L.S.

TOWARD AN IMPROVED STRATEGY FOR LANDSNAIL COLLECTING

by Harry G. Lee

Earlier *Shell-O-Gram* reports [28(1):6; 28(4):7; 30(1):3] gave an account of the introduction of our president, Billie Alely Brown, to landsnail collecting in the Smoky Mts. An impressive list of species found by her (with help from husband Paul and from Bonnie Holiman) attested to both the provident habitat and the improvement of Billie's field work skills. In October, 1989, Billie and Paul revisited the cabin on James Mountain (northwest of Asheville, NC), and Billie made her sixth collection. Earlier this year a variety of smaller snails was found in soil clinging to the roots of oak saplings she had harvested on the mountain. This fortuitous observation impelled me to ask Billie for a larger, more selective sample of soil.

Accordingly, Billie set out with an ample provision of jumbo ziplock plastic bags. She scooped up several handfuls of humus and leaf litter from soil pockets in limestone talus near the cabin — at about 3,300 ft. altitude. She only collected four species of snails during brief reconnaissance using the traditional method of hand collecting visible specimens.

A week later I received a generous portion of this stuff — about two quarts. It was placed in a giant photographic processing tray (1 meter square) and allowed to dry in the controlled relative humidity (75%) of my shell room. Careful kneading of dirt nodules and aeration of the stuff were performed most every day to assure thorough desiccation. One week later I sifted the material through graded sieves (built and provided by Bob Lipe) and saved the stuff which passed through the smallest (2mm square; 2.8mm diagonal) mesh. A small number of familiar species was retained on the sieves, but the hunt had just begun!

Thus I harvested 1000 ml (about a quart) of stuff that looked more like coffee grounds than snail habitat. Samples of about 5 ml (one teaspoonful) were sprinkled on a 10 cm square plastic tray so as to form a thin mantle. I had earlier marked the underside of this tray with parallel India ink stripes at 8mm intervals (slightly less than one field diameter of my Swiftstereo-microscope at 40 X). I then began a painstaking but remarkably productive inspection of Billie's sample. Each tray took about 10 minutes to process — including the removal of snail specimens. This latter operation was accomplished by my time-tested technique of wetting the tip of an open safety pin with the tip of my tongue and touching this point to the shell under visual control through the scope. The table [not here reproduced] details the phenomenal outcome of the 30-hour-long study performed over a few weeks...

I estimate that 800 to 1,000 shells were observed in the soil sample. Since many juveniles were not considered worth keeping (although most, except the smallest *Carychium* species, were identifiable), they were not selected. I culled 540 specimens of 28 species from the soil sample. Over 97% came from the "coffee grounds" component. A substantial number of species were new to my collection and/or new to the James Mt. cumulative checklist; many represented new county records; most were in ample numbers of specimens. Two species appear to be new to science. These details and others, such as adult shell size, are recorded in the table. By combining the results of the five forays led by Billie, we have a total of 37 species of land snails. All were collected in a radius of a few hundred yards — less than 1/4 mile from the cabin on James Mt.

What lessons can ambitious shellers take from this experience?

A few leap to mind as I review the table:

1. The two collecting methods (field reconnaissance/hand picking and soil sampling) are similarly effective and remarkably complementary in terms of species diversity.
2. Smaller species (<3mm.) are almost totally overlooked by hand-collection.
3. Larger species are moderately well-represented in soil samples — especially their juvenile shells, which can be easily identified given a good reference collection and sufficient experience.
4. The optimal sample size for soil and time commitment for its analysis is not yet apparent. Certainly 30 hours is not going to be made available very often after this pilot study. An estimated 90% of micro species (<3mm.) from these "coffee grounds" could be found in 10 _ 5 hrs. of microscope work (fact based on specimen counts). Techniques to concentrate the shells [e.g., Coney, C.C. (1981) A method of collecting minute landsnails *Nautilus* 95 (1): 43-44] may economize the neck-wrenching tedium.
5. A reasonable expectation is that a single experienced collector (now Billie's approaching that status) could obtain over 30 species from this station by combining a one hour search (preferably under wet conditions) with the sorting of a 50 to 500 ml (dry/sifted volume) soil sample (100 to 1,000 ml soil) obtained as Billie did.

I welcome readers' help in trying to extend this experience and test the hypothesis above. Hopefully other stations in the Southeast will produce payloads as rich as James Mountain, given our "scientific" strategy.

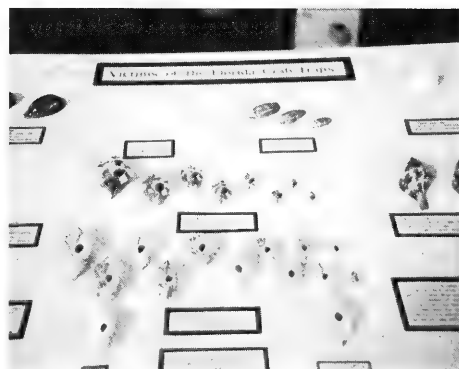
1801 Barrs Street, Suite 705, Jacksonville, FL 32204.

COA TROPHY WINNERS



Winners at the Astronaut Trail Shell Show, Jan 23 and 24 were Sylvia and Jake Dominey, shown here with their COA Trophy and their winning exhibit, "Lambis, The Spider Conchs."

Part of the COA Trophy winning exhibit at the 1992 British Shell Collectors' Club Shell Show, "Victims of the Florida Crab Traps." Mr. Stanley Francis of Belfast, Northern Ireland was the creator of this prize-winning exhibit.



FLYING SNAILS!!!

by Clyde H. Hebert

These were first discovered in the early Sixteen Hundreds by a Spanish Priest, who dwelled for about twelve years among the Igorot tribes in the remote mountains of Northern Luzon. The Ifugaos and Bontocs with whom he lived regarded him with such high esteem, particularly his head, that he later donated it to them. Involuntarily.

Father Ignacio gave an account of the mollusks that he had seen, which he called Pteropoda, but as his writings were not published, that name belongs now to an entirely different Class altogether. His group might have been called Platypoda, but that name is also occupied.

A German Naval Surgeon, Herr Doktor Heinrich von Zweispeigler, learned of the good Father's account, and actually visited the region where the snails could be found. They were in an isolated mountain valley area, and were only a few in number. Never very plentiful, they were held in superstitions fear by the native tribes; who, believing them to be evil spirits, destroyed them whenever found. They probably have now been extinct for a very long time.

Doktor Zweispeigler wrote of his findings after returning to Germany, but from memory, with perhaps a bit of fancy thrown in. According to him the species, *Nyctovolans bromosus* Zweispeigler, 1863, had an external, greenish rudimentary shell as a slightly convex broad plate, to which the foot and mantle were attached, allowing these to expand as a sort of parachute, and letting the animal glide from the upper branches of trees, where they fed upon algae and lichens. They did not actually fly, but glided as does the flying squirrel. Although Pulmonates, they did not belong to the Stylommatophora, the eyes being non-retractile. These were instead on stalks, like those of a crab, and were capable of being separately focussed and rotated like those of the Old-World chameleon. The animal exuded a greenish fluid when annoyed, which had a pungent and fetid odor, and was highly irritating. This was probably a deterrent, and protected them from predators.

More study of these interesting creatures is greatly needed, if only they can now be located.

Is this a hoax? Of course it is! But then there are things in this World of ours just as wonderful, that Horatio never dreamed of!

The now deceased Clyde Hebert submitted this delightful joke, "with tongue in cheek," to the Jacksonville Shell Club Shell-O-Gram on the "First day of April, 1975," and it subsequently appeared in the April issue of that publication, with the following introduction: "It was our pleasure and good fortune to meet some several years ago at the Jacksonville Shell Club, a man who even though he may appear to be the quiet, timid type is really a very fun loving and witty person who knows much more about shells than most people think. He is also an artist, speaks several languages and is just an all-around nice person to know..." Our thanks to Harry Lee for suggesting it.

ONLY COUPLES NEED APPLY...

Want to get away to a tropical island all your own? Don't we all! Here's an opportunity for you to do that very thing, even if it's only by letter. Our lone member from the Republic of the Marshall Islands, Joan Rutherford, P.O. Box 1305, Majuro, M.H., 96960 (USA Zip Code) would like a pen pal. She wants to trade knowledge (yours) for shells (hers). A USA citizen, Joan retired to Mili Atoll and lives on a 35 foot by 90 foot islet, the smallest inhabited land mass in the Republic.

A retired individual or couple, who might like to visit and shell with her someday, would be Joan's preference in pen pals. She would also like word from companies that offer pictorial catalogues showing shells in her part of the world.

Because Mili Atoll is some distance from the post office on Majuro Atoll, Joan says she only gets her mail every few months, so expect leisurely correspondence.

In the past year, she has gathered 80 different cones and 40 cowries, both of which are plentiful in her area.

COLLECTING LAND SNAILS IN THE EASTERN UNITED STATES

by Kurt Auffenberg

The past decade or so has brought a dramatic increase in interest in the collection of land snails. In fact, this symposium well illustrates this trend. Hopefully, this curiosity about one of the largest groups of terrestrial organisms will continue to prosper.

When I first became bitten by the land snail bug about 15 years ago, I had a difficult time simply finding some. It was always fairly easy to locate a few old, dead shells, but I knew that would not do. The collection of live material obviously takes different strategies. This is much like the difference between picking up beach specimens and collecting living marine species. You have to use other techniques.

The most important concept to grasp when collecting land snails is to "think like a snail." Wherever I collect, I ask myself, "If I were a snail, where would I be?" Snails are cold-blooded, soft-bodied organisms and so are quite sensitive to daily or seasonal fluctuations in temperature and, probably more importantly, humidity. I look for the most climatically stable places in any local habitat. These secret spots are where the snails will be.

The type of soil and rock found in an area directly affects the local land snail fauna. Although land snails can be found on virtually every soil type, calcareous, or calcium-rich, soils are the best. Snails use calcium for the formation of their shells. Snails will be more common when calcium is readily available, such as in limestone regions. Acidic soils or quartz sand areas usually have few snails due to the lack of calcium. Sandy areas also tend to dry out quickly.

In the eastern United States the most profitable collecting habitat is woodland. The moist conifer forests of the Appalachian region are very rich in both numbers of species and individuals. However, the drier pine forests of the South are usually not worth investigating. The forests along river and stream floodplains are the most consistently productive habitat in the eastern United States. The dead leaf accumulations at the bases of trees and around logs and rocks provide the best cover and protection for land snails. Moist roadside ditches with adjacent woodland are easily accessible and usually worth a stop. However, collecting should not be done on land which is flooded frequently. Land snails are very poor swimmers.

Now that we know a little about where and why snails live where they do, we need to learn how to collect them. The larger species can be collected by hand by gently pushing leaf litter aside and looking underneath rotten logs, rocks and boulders. Unfortunately, you will only find 20 - 50% of the fauna this way. The remainder of the local fauna will be very small and not easily collected by hand. The most productive method is to collect leaf litter samples. You should gather about one half or more of a paper grocery bag of leaves and soil from around tree bases, rocks and logs. This sample is then dried in the sun, sifted, and searched with a hand lens or under a microscope. I once collected 32 species at one locality in Florida utilizing this method. Only three species were collected by hand. Another method is to place pieces of plywood in the forest. These are checked periodically by picking them up and gently pushing the snails sticking to the bottom into a container with a small paintbrush.

Some species of snails are able to climb so you should not always look down. During their active periods or after particularly heavy rains you may find snails on rock surfaces or low on tree trunks. South Florida provides a unique collecting opportunity. True arboreal snails, such as *Liguus* and *Orthalicus* are found there. These are usually found on tree trunks and branches, in knot holes, and on the undersides of tree and shrub leaves.

The tools of the trade are few. Along with the usual collecting containers such as plastic and paper bags, and vials or bottles, a potato rake is an ideal collecting tool. It can be used to rake through leaf litter and trash piles, to turn over logs and boulders, and as a walking stick.

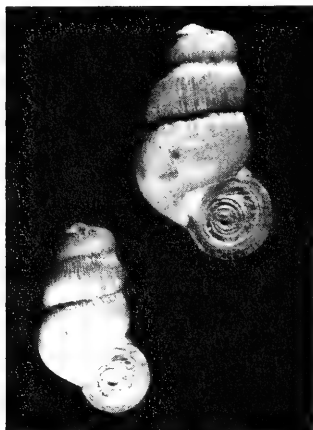
I hope more shell collectors make the quantum leap to land snails. Many exciting discoveries are yet to be made and we chosen few land snail enthusiasts need all the help we can get.

Malacology Division, Florida Museum of Natural History, University of Florida, Gainesville, FL 32611. This article is the text of Kurt Auffenberg's symposium address, delivered July 30, 1992, at the COA Convention in Jacksonville.

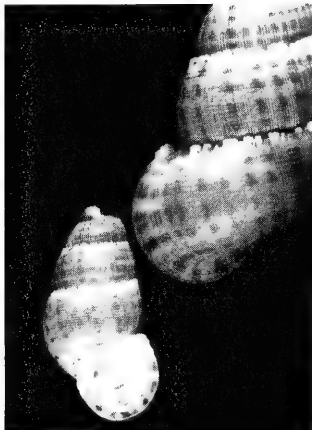
THE ANNULARIIDAE OF THE CARIBBEAN REGION

Text and Photos by Richard L. Goldberg

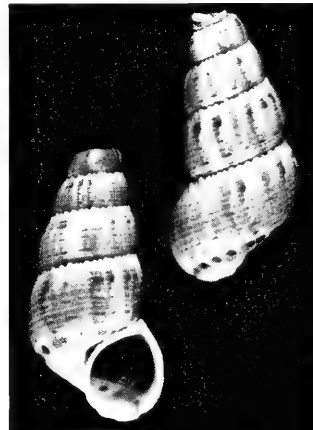
Rich Goldberg has moved to Maryland. His new address is P.O. Box 409, Simpsonville, MD 21150-0409.



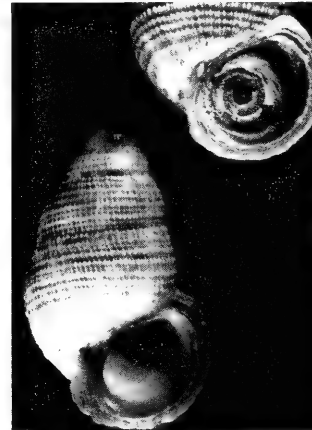
Rhytidopoma honestum (Poey, 1851) — Lomas de Camoa, Havana Province, Cuba; 6mm.



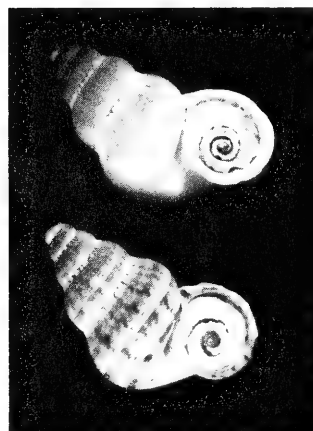
Choanopoma (*Choanopomops*) *largillierti* (Pfeiffer, 1846) — Campeche, Mexico; 15mm.



Chondropoma canescens (Pfeiffer, 1851) — Eleuthera, Bahamas; 16mm; introduced from Cuba.



Chondropoma rufilabrum ("Beck" Potiez & Michaud, 1838) — St. Croix, Virgin Islands; 11mm; red lip.



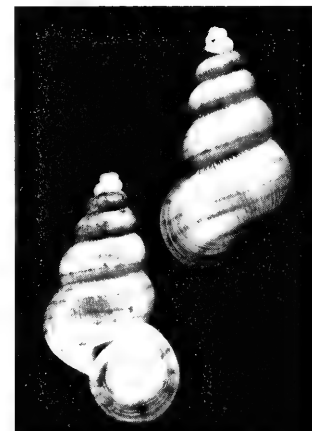
Tudora (*Tudorina*) *rangelina* (Poey, 1851) — Rangel, Pinar del Rio, Cuba; 24mm; unicolor and banded forms.



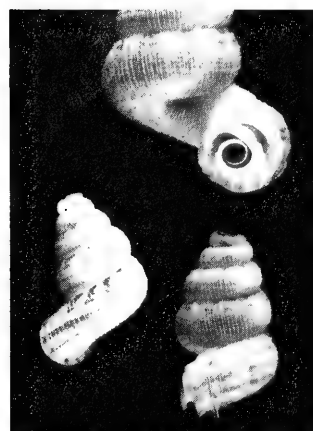
Tudora (*Colobostylus*) *chevalieri virgata* (C.B. Adams, 1851) — St. James Parish, Jamaica; 14mm; three-banded form.



Tudora (*Tudorops*) *redfieldiana magnitesta* H.B. Baker, 1934 — Hanover Parish, Jamaica; 16mm; western parishes only.



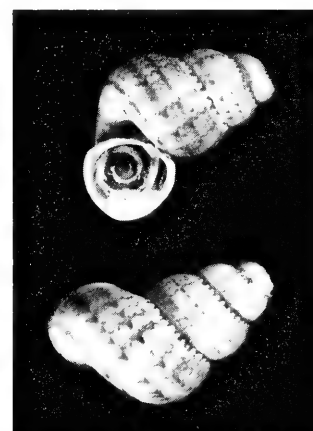
Tudora (*Tudorisca*) *aripensis* (Guppy, 1868) — Valencia District, Trinidad; 15mm.



Adamsiella (*A.*) *jarvisi* Henderson, 1901 — St. Catherine Parish, Jamaica; 11mm.



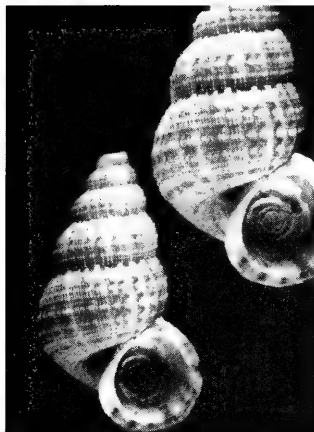
Adamsiella (*A.*) *miranda* (C.B. Adams, 1849) — Trelawny Parish, Jamaica; 17mm.



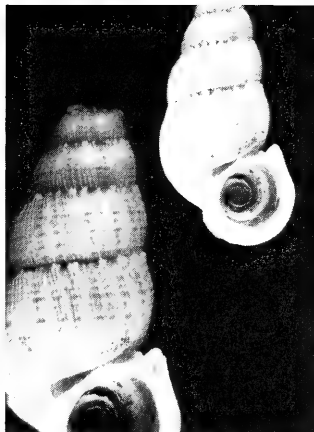
Annularia (*Annularita*) *majuscula* (Morelet, 1851) — Pinar del Rio, Cuba; 21mm; very variable.



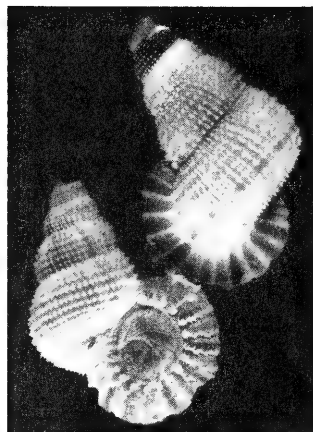
Annularia (*Annularella*) *cumulata* (Pfeiffer, 1863) — Baracoa, Oriente Province, Cuba; 10mm; orange.



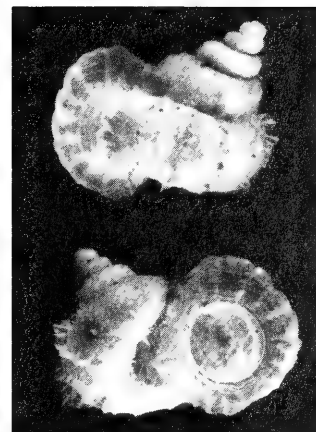
Licina decussata (Lamarck, 1822) — El Yunque, Puerto Rico; 15mm.



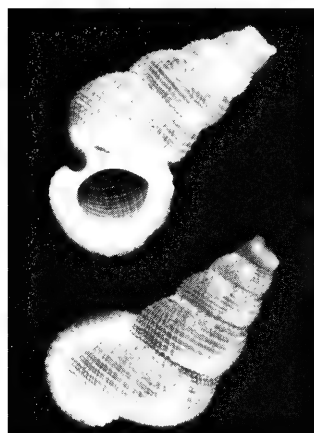
Licina aguadillensis (Pfeiffer, 1875) — Aguadilla, Puerto Rico; 16mm.



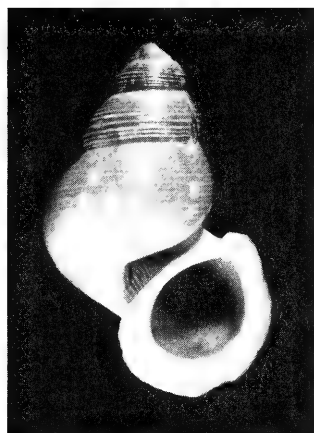
Chondropoma (*Chondropomartes*) *presasianum* (Gundlach) Pfeiffer, 1863 — Matanzas Province, Cuba; leg. M.L. Jaume; 16mm.



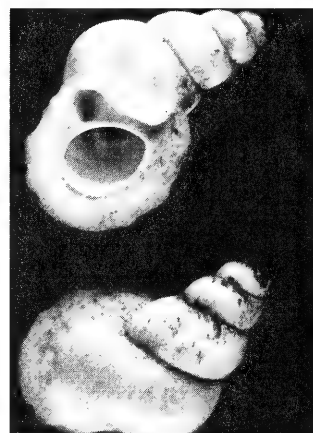
Meganipha rhecta Thompson, 1978 — Puerto Plata Province, Dominican Republic; 10mm.



Turrithyra (*Turrithyretes*) *echinulata* ("Wright" Pfeiffer, 1863) Pinar del Rio, Cuba; 24mm; red.



Chondrothyra (*Hendersonoma*) *percrassa* ("Wright" Pfeiffer, 1864) — Luis Lazo?, Cuba; 40mm; subg. type.



Chondrothyra (*Foveothyra*) *foveata* ("Gundlach" Pfeiffer, 1863) — Pinar del Rio, Cuba; 24mm; subg. type.



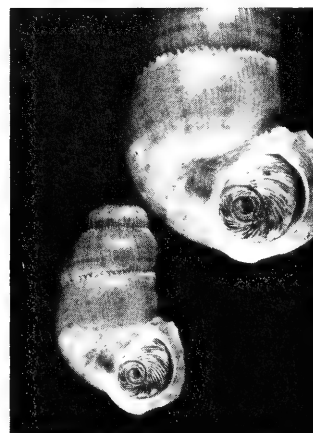
Eutudora jimenoi ("Arango" Pfeiffer, 1864) — Jaruco, Havana, Cuba; 18mm.



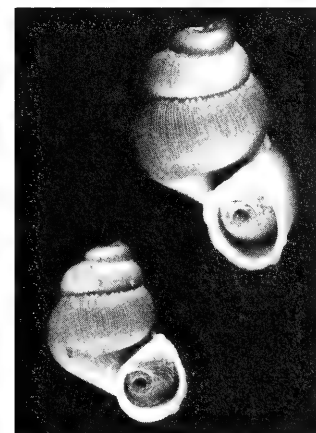
Annularia (*Guajaibona*) *pretrei* (Orbigny, 1842) — Pinar del Rio, Cuba; 6mm; white, translucent.



Annularia (*Annularodes*) *obsoleta* Torre & Bartsch, 1941 — Santa Clara Province, Cuba; 15mm.



Opisthosiphon (*Bermudezsiphona*) *palmeri* Torre & Bartsch, 1941 — Santa Clara Province, Cuba; 14mm.



Opisthosiphon (*Cubitasiphona*) *paredonensis* Torre & Henderson, 1920 — Camaguey Province, Cuba; 10mm.

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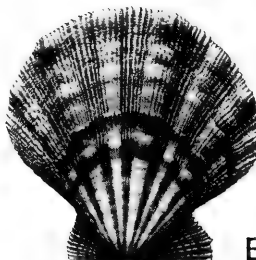
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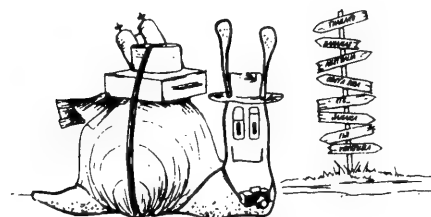
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BOOK REVIEWS

Seashells of the Northern Hemisphere by R. Tucker Abbott. 1991. Gallery Books, New York. 191 pp., many color photos, 10" x 13", hard cover, \$24.95.

In early 1991 I reviewed the abbreviated American edition of this worthwhile guide to the most commonly available marine mollusks of the Northern Hemisphere. I return now to acquaint you with the larger edition, which contains some 155 (by my count) additional species, many of these also not included in most popular books. The photos, as well as the type size, are larger in this version, and the reader will find it easier to identify specimens using the larger book. The quality of the photos is uniformly excellent, and only one species (*Epitonium indianorum*) has been illustrated as sinistral, incorrectly, of course.

In addition to the photos and accompanying text, which cover univalves, pulmonate snails, tusk shells, chitons, and bivalves from three regions (western North America from Arctic seas to northern California, the western Atlantic from Newfoundland to Cape Cod, and the eastern Atlantic from the British Isles to northern Portugal), the author has included 14 pages of introductory material covering such topics as geographical distribution, molluscan ecology, molluscan marine provinces, classification and scientific names, molluscan feeding and reproduction, and how to collect shells. For each included species, the author has provided genus and species name with author and date of description, common name, size, locality, and a few sentences of description. A glossary of terms, concise bibliography, and an index by common name complete this volume. In one of the European publications I noticed a few corrections to the names of species included, but this does not materially detract from the usefulness of this book. I would urge all collectors to add this book to their libraries. —W.S.

World Seashells of Rarity and Beauty - revised and enlarged edition by Akihiko Matsukuma, Takashi Okutani and Tadashige Habe. 1991. National Science Museum, Tokyo. 206pp., 158 color plates. 8 1/2" x 12", hard cover. \$55.00.

The Kawamura Collection, the largest private shell collection in Japan, was donated to the National Science Museum, Tokyo, in 1983. To commemorate this donation, a special exhibition was organized and the first edition of this book, which included 48 plates of Kawamura's rare and beautiful specimens, was published. Mr. Kawamura, 92 years of age when this book was published, has continued to add specimens to his donated collection. This augmented collection is shared with the world upon publication of this enlarged and revised edition.

This second edition contains 158 exquisite plates covering nearly 1000 species — 750 gastropods, over 200 bivalves, 16 scaphopods and 9 cephalopods. Among the species, subspecies and varieties illustrated are 23 Pleurotomariidae, 33 Strombidae, 37 Cypraeidae, 91 Muricidae, 89 Buccinidae, 83 Volutidae, 41 Pectinidae and 20 Cardiidae. Worth special mention are the many holotypes and paratypes here illustrated, many which have never before been pictured in color. Japanese species are especially well represented, and judging from the quality of the illustrated shells, the Kawamura Collection is one of the world's premier mollusk collections. All of us who are collectors of specimen shells and lovers of the beauties of nature will want to own this truly spectacular volume. —W.S.

The Edge of the Fossil Sea, by Edward J. Petuch.

Following in the footsteps of Rachel Carson, Edward Petuch has painted a charming and authentic picture of the intriguing fossil past of southern Florida. Replete with over thirty pages of realistic sketches of tertiary seas, the book also presents many sharp photos of recently discovered conchological gems. Come join Ed in his adventures into the ancient depths of the Okeechobean Sea and Lake Okeelanta of a million years ago. Learn of the reef life that now lies buried under Florida's modern highways near Miami, and how the Terror Birds and now extinct sea mammals sustained themselves on the abundant molluscan populations of those long ago years.

If you've ever yearned to venture into today's gravel and shell pits in search of beautiful fossils, this book will lead you into the realm of the secrets of Florida's fossil shell collecting. Dr. R. Tucker Abbott, in his foreword to this book, says, "Our mysteries of the past are beginning to be clarified. The eventual unraveling of this story will delight us for generations to come. This book will get you started."

This paperback book of 80 pages is publication No. 2 of the Bailey-Matthews Shell Museum on Sanibel Island. This contribution was financially supported by Albert and Mary Bridell of Sanibel. Copies may be ordered from the Shell Museum, P.O. Box 1580, Sanibel Island, FL 33957. Current members of the museum receive a 20% discount. **The Edge of the Fossil Sea** (ISBN 0-9634264-0-0) is \$14.00, postage free; Florida residents add 84 cents sales tax.

Antarctic Mollusca, with special reference to the fauna of the Ross Sea by R.K. Dell. *Bulletin 27, The Royal Society of New Zealand*. 1990. 311 pp., 482 figs., 21 tables, 6 3/4" x 9 3/4", paper. \$65.00

The author, one of New Zealand's most respected malacologists, began compiling data on the mollusks of the Ross Sea in 1957. Over the ensuing decades, he studied numerous collections from a variety of expeditions and visited several museums to study those holdings of Antarctic Mollusca. The present volume is the result of those many years of research, and it is expected that further publications will cover, in the same detail, mollusks from other areas of Antarctica.

Mollusks covered in this monograph include bivalves, chitons, scaphopods, and gastropods. Systematic discussion of species occupies nearly 260 pages, with an analysis of distributional patterns, a list of expedition stations, detailed bibliography and index to scientific names completing the volume. Treatment of each named taxon includes genus and species (or subspecies name, author and date of description, references, list of material examined, distribution, diagnostic remarks, and figure citations (in most cases named taxa are figured). Two new species of bivalves and one new genus, 43 new species, two new subspecies, and one replacement name for gastropods are introduced in this bulletin. These new taxa descriptions and figures, coupled with very detailed and exact treatment of this otherwise poorly known mollusk fauna, make this book a most important reference and a necessity for those interested in the mollusks of the Antarctic and nearby area of the southern hemisphere. The price, though somewhat high by "popular book" standards, is well within reason for a book of this many pages and such scientific value. —W.S.

New and little known "skeneform" gastropods from the Mediterranean Sea and the adjacent Atlantic Ocean by Anders Waren. 1992. *Bollettino Malacologico* 27 (11-12): 149-248, 47 figures, paper. no price indicated.

This 100-page booklet covers about 150 named taxa of microgastropods, traditionally included in Cyclostrematidae, Skeneidae and related families, primarily from the Mediterranean and the adjacent Atlantic Ocean. A new family, Xylodisculidae, is here erected, as are the new genera *Skeneoides*, *Akritogyra* and *Lissomphalia*, and nine new species.

Systematic treatment of the families Skeneidae, Trochaclididae and Xylodisculidae are made on the basis of shell, radular and anatomical characters. Species citations include names of genus, species, author and date of description, diagnosis and remarks. Crisp, enlarged, black-and-white photos of radulae and shells enhance this valuable contribution. Comments on various skeneimorph taxa, a summary of taxonomic changes introduced in this paper and a detailed reference list complete this book. We are happy to recommend this latest addition to the author's works on the tiny (often less than 2mm) gastropod mollusks. —W.S.

In Memorium

Bonnie G. Holiman

January 5, 1935 - February 1, 1993

Although her passing leaves conchology greatly diminished, the legions who knew this dedicated and benevolent spirit have been mightily enriched by Bonnie Holiman's touch. Her contributions to our cause were manifold and abiding, bringing enlightenment and pleasure to her many bereaved colleagues as well as countless others who will never be privileged to know her.

A native of Los Angeles, she reached adulthood there and married Stanley Holiman, with whom she traveled during his career in the U.S. Navy. She became a sheller around 1964 while they were garrisoned in Oahu. Subsequent assignments in Texas, Georgia, and finally Florida saw her complete her college education, receive nurse's training, augment her fine collection, and assume a position of popularity and respect in her avocation. After Stanley's retirement, he and Bonnie made the much-appreciated decision to reside in Jacksonville, Florida. After joining the Jacksonville Shell Club in 1975, she served in essentially every official capacity for the club. Although her accomplishments were profuse, she may be best remembered for two.

Bonnie was an indefatigable collector who was at her best when the ephemeral scallop fishery's fleet visited Jacksonville or St. Augustine. She pored through the bycatch with tenacity and special attention. The thousands of carefully-sorted specimens form one of the most important bases in the knowledge of our local marine malacofauna, now well in excess of 700 species — many of which are unnamed and the exclusive product of her labors.

She made an equally important mark as a caring and skillful shepherd to beginning collectors. She had many protégés, but undoubtedly the most beloved and probably the most accomplished

of those was her son, Stephen, who plied the coastal waters of the Malay Peninsula, and later the limestone hillocks and rice paddies of Thailand in pursuit of mollusks with dedication and no little success. A small token of his and Bonnie's industry is recapitulated in the spectacular land snail, *Hypselostoma holimanae* Thompson & Lee, 1988, discovered by Steve.



Yet Bonnie brought other gifts to us. Her radiance elevated all whom she touched. She was usually the first to help when a friend (most of them were shellers and the reverse was nearly true) was sick, otherwise down, or in need. She served our club and others officially and otherwise for over 25 years without need for acknowledgement — recording, banking, presiding, hosting, writing, studying, shell-crafting, even baking — when she was needed. The Jacksonville Shell Club and the world of conchology will miss her presence.

Bonnie leaves her husband, Stanley M., her sons Stanley C. and Stephen G., daughter-in-law Dtan, and two grandsons, Sean and Stephen C. Holiman. With them we mourn our loss and count our good fortune at having had this precious and wise friend.

—Harry G. Lee

Also printed in the *Shell-O-Gram*,
Newsletter of the Jacksonville Shell Club

Robert J.L. Wagner

(1905-1992)

Bob Wagner, well-known among conchologists as the senior editor of **The Standard Catalog of Shells** and recorder of the official World Size Records, died of a heart attack Nov. 18, 1992 in Elizabethtown, PA, at the age of 87. For years he was active in the shell world in Philadelphia and southeast Florida, often serving as a scientific judge in various shell shows.

Robert Jacob Lewis Wagner was born on August 9, 1905 in Hazelton, PA, graduated from Hazelton High School and attended Penn State College in 1923. For years he was an engineering administrator with the Bell Telephone Company of Philadelphia when he became a charter member, and later President, of the Philadelphia Shell Club. In 1964 he and Tucker Abbott started up **The Standard Catalog of Shells**, then known as **Van Nostrand's Standard Catalog of Shells**, and until his recent death he kept the registering of the World Size Records.

His first wife, Genevieve Duffy Wagner, a public school teacher, died in 1979. Bob moved to Marathon, Florida, and later to Miami. In 1990, he and his second wife, Frances E. Williams

Wagner, a prominent artist and ceramic muralist originally from California, moved to a retirement community in Elizabethtown, PA.

Bob was an indefatigable worker with an ability to handle massive details, so necessary in his conchological publications. He corresponded with hundreds of people around the world, keeping measurements of over 3,000 species of marine shells. He wrote informative articles for many shell magazines and club newsletters, as well as giving many illustrated public lectures on shells. All during his life Bob kept abreast with modern technological developments and was constantly suggesting new approaches to shell collecting. On the day before his untimely death at 87, Bob was entering new size records sent in from Thailand. He and his wife, Fran, took many collecting trips together to the Bahamas and lower Caribbean.

Fran, still active in needlepoint projects and shells, will remain at their home at 2114 James Buchanan Drive, Elizabethtown, PA 17022-3101. The World Size Records will be continued for now by Dr. Abbott (P.O. Box 2255, Melbourne, FL 32902-2255).

—R.T. Abbott

COME SHELL THE FLORIDA PANHANDLE

by Linda and Jim Brunner

The Florida Panhandle contains a wide enough variety of shelling locales to appeal to the most discriminating sheller. Be it diving, snorkeling, wading, freshwater, land or fossil, there is something here for everyone. If this sounds a little bit like an advertisement, it is! We're trying to sell you on the idea of attending the 1993 COA Convention at Panama City Beach, Florida, and doing some shelling with us. Take a few minutes to read this article, whether you plan to attend or not. If you had intended to skip this year's giant COA get-together, it will surely change your mind. If you have already decided to join the fun, you need to read it. It contains information on the various shelling localities, equipment needed, walking distances, obstacles, etc. — all those things you need to know before you fill out your convention registration card found elsewhere in this issue.

WALKERS AND WADERS

Bay County didn't get its name by accident — there's water all over the place. The largest body is **St. Andrews Bay**, and the best shelling is in its southern half. Several of our wading, walking, snorkeling trips will take place here. The best shelling locations can only be reached by boat, so we'll be using commercial charters to move us around. The bottom throughout the bay is firm sand and grass with a sprinkling of sea urchins. There are broad flats with water less than three feet deep, where five species of murex, three of *Fasciolaria*, and two of *Busycon*, bay scallops, and pearl oysters make their home. Dip nets are recommended for the waders. You must be able to disembark from and reenter a boat in 2.5 feet of water for these trips.

Our next stop is **St. Andrews Sound**. Picture if you will 18 miles of shoreline left exactly as nature created it and you have the Sound. After you park among the snow white dunes, the total walking distance before you can begin shelling is 50 feet. And can you walk! There are more flats here than your feet can stand, and the drift line has always provided some rare surprises. During our last shell show, club member Jane Stark did an excellent display on what can be discovered at the Sound. This display will be available for your perusal at the convention site on Monday.

The most famous shelling site on the Panhandle is **St. Joe Bay**, and no tour of the area would be complete without at least one visit there. Our site will be **Barbara's Place** (which is one of those places you don't find unless you know exactly what trail to use). If the road is in good shape, the walk is 50 feet — if not, add on a 350 yard hike. It's a little mucky close to shore, but it firms up nicely once you are beyond that. St. Joe Bay has square miles of flats to explore and this is the prime location in all of it. You might want to bring a sifter in addition to a dip net so that you can find the small olivellas and marginellas that frequent the sandbars. If you are extremely lucky, you might turn up a specimen of *Cantharus multangulus grandanus* (Abbott, 1986) which is known only from this area and is named after Gulf Coast Shell Club founder Bob Granda.

SNORKELERS

The primary venue for the finny set will be **St. Andrews Bay**, where we have two boat sites and one driving site in mind. The first of these is **Spanish Ante Cove** on the north side of Shell Island. This area is noted for its bay scallops in the summer, in addition to many other bivalves. And where there are bivalves there must be predators. These include Lace and Apple Murexes, True and Banded Tulips, Horse Conchs and Lightning Whelks. Bring a dip net to run through the grasses for those smaller species, and pick up any solid object to search for Sharp-Ribbed Drills, Pitted Murexes, and various marginellas. Sharp-eyed individuals should be able to find some nice-sized pearl oysters in the grass. And the very lucky? Well, *Cymatium parthenopeum* and *Cassis madagascariensis spinella* have been found in the Cove.

Our second trip to the Bay will be to **Camel-Back Hump**, a shoal area located in mid-bay. We can almost guarantee you'll find a Giant Eastern Murex to take home from this site, as well as a whelk or a Horse Conch — they seem to prefer this area. If the water clarity is good enough you might even spot some members of the resident colony of *Strombus alatus*. If you are not a hard-core snorkeler and have to rest every now and then, fear not — the spine of the Hump is shallow enough that you can sit down if you want. If you select these trips you must be able to disembark from and reenter a boat in 2.5 feet of water.

The third site we can reach by car. Our destination is **Beach Drive** in the downtown area of Panama City. I know that sounds crazy: "Downtown? It must be polluted." But it isn't, and it offers some very interesting shelling. A long rock jetty offers a nice habitat for the hard strata species and the grass flats are some of the most productive in the Bay. A couple of notes: 1) A Saltwater Fishing License is needed for all these trips, and 2) If you are the type who insists on doing your snorkeling 600 yards from anybody else, then it's BYOF (Bring Your Own Flag) — our local Marine Patrol is very diligent at issuing those \$50 citations.

DIVERS

The Panhandle area of Florida boasts one of the nation's highest concentrations of sunken vessels and artificial reefs. Added to this are dozens of limestone break reefs which dot the Gulf bottom just offshore of Panama City Beach. Arrangements for these three trips are being made through local dive shops. Bring along as much or as little of your own gear as desired — you can rent anything you need here. Naturally a Saltwater Fishing License is required as well as your certification card. Dives will be from 50 to 100 feet in depth. In the event that seas are too heavy to go offshore, we have alternative 40' dive sites planned in St. Andrews Bay.

FOSSILERS

The Panhandle of Florida looked quite different during the Mid-Miocene. the shoreline was as much as 50 miles inland from the present coast and the climate supported a host of marine species that are today associated with much warmer regions. One glimpse of this distant past is found at 10 Mile Creek, an hour's drive from the convention site. The dense blue marl through which the creek passes has preserved these 14 million year old mollusks in perfect condition — just waiting for you to collect them. Four hundred and ninety-two species have been identified from this site, including (among others) a broad array of murexes, cones and whelks, two species of *Typhis*, one cowrie (rare), two *Xancus* and a host of bivalves. Walking distance from the road to the site is 200 yards, and you must be able to climb up and down a six foot embankment. (The latter is not an impossible task as we will have steps carved out and a guide rope — but it is there.)

Working this area is a bit different than APAC. First of all, the marl is hard and must be chipped loose with a hammer and screwdriver before it can be broken up. Second, the area is restricted in size and will not support more than 20 people at a time. Third, you are going to get muddy, and probably wet, so wear old clothes or a swimsuit and shoes you won't miss. The good news is that the fossils you find need no immediate preservative action — they can be transported in a padded box without difficulty.

As we go to press we are working on lining up another fossil site called **Alum Bluff** — the marker site for this area. The problem is that it can only be reached by boat, and appropriate boats are hard to find in the area. The score thus far? Alum Bluff can accommodate 30 people — the biggest boat thus far accommodates three! Now for a little cold water. As you can tell, the planned trips will have to be limited in size, and we can't take everyone every day. We ask that you die-hard fossilers consider signing up for something else on at least one of the field trips. More cold water — or maybe we should say high water. Both fossil sites go under water during heavy rains, so keep your eye on the weather maps and pray for a dry June.

(Continued on page 22)

COA '92: A FIRST-TIMER'S PERSPECTIVE

by Deborah Wills

"Forget about your job; forget about your worries. This is your vacation; this is your FANTASY!" 1991-92 COA President Glen Deuel's statement during the opening ceremonies rang in my ears and reverberated through my soul, then later came back to haunt me. FANTASY! To fancy, to portray in the mind, to IMAGINE." This WAS my fantasy, one I could live without regret. Listening to Glen's opening remarks, I realized that, although big conventions were not new to me, this one was somehow different, special.

As a young child I was smitten with a deep love and appreciation for shells during a Christmas vacation to Sanibel Island. (Sound familiar?) That same year, my father spent time on Kwajalein and sent back wonderfully exotic new shells. That was it! My fate was sealed! I was infected with an incurable case of "shellitis," and decided to become a marine biologist and study shells. You see, I had never even been to a shell show before, and as I raised my hand when Glen asked who were COA first-timers I was unsure what to expect, afraid to expect too much.

Childhood in North Alabama afforded few opportunities for shell collecting. My family didn't take my interest seriously. Nor was I impressed with land and freshwater mollusks at that time. For me it was marine exotica and the visions they evoked. My love for shells came to be suppressed, though not diminished. My life seemed to follow paths directions than back to the sea.

Several years ago, I discovered the North Alabama Shell Club. Finally! People who didn't think it STRANGE to be awed by the beauty and mystery of shells. Land-locked people with an uncommon interest. It was through this club that I learned of COA and was encouraged to attend the convention.

For me, the convention began on Sunday, July 26th. After a 10-hour drive from North Alabama to Ponte Vedra Beach, my companions and I staggered on road-weary legs into the Marriott Convention Center. Before I could register, or even check into the hotel, the table of bargain shells packaged by Mr. and Mrs. Weiss caught my attention. Who wanted to register with all those shells begging to be looked through?

AFTER loading up with two brown bags of shells, THEN registering and receiving a Convention "goodie bag," I wandered off to check into the hotel. The setting was perfect. The view from inside and outside was a picture of rest and relaxation — a much needed dream come true.

Bonnie Holiman's slide presentation of Florida's shells that night merely whetted my appetite for the week's events. I wasn't to be disappointed either, as Jacksonville served up one delight after another. Their careful planning and long hours of hard work paid off. (Thanks, Jacksonville!) It didn't take long to discover that shellers are a fun group of people to be around. Many of the attendees seemed to have found their own "fountain of youth" in shells. Their exuberance, enthusiasm and light-heartedness were very contagious.

There was ample opportunity to meet distinguished personalities, authors, and/or authorities in the field, people who had been mere names a day earlier. Meeting Tucker Abbott whose books have inspired me for years, was both a thrill and a delight. And listening to discussions on databases and collections with Dr. Gary Rosenberg was a real eye opener. So was the realization that Dr. Lee was not as old as I had imagined.

Early morning mingling, buying and selling club items, gathering reading materials in the club sales areas was exciting: you never knew who might come to buy a pin, take a newsletter, or just stop to chat. Once it was William Clendenin, a pleasant surprise since I'd used his article on opercula (Dec. 1991) during a program for my local club.

The daily talks on shelling areas and experiences made me wish I were retired and/or rich so I could spend all my time under the sea, in a shell book, on a beach, or a combination thereof. Peggy Williams' slide

"fashion show" made me vow to dress more carefully next time I went shelling.

Richie Goldberg's land shell program made me wonder what treasures were in my own backyard, while Drs. McCullach and Thompson opened my eyes to the abundance of freshwater mussels in North Alabama. Drs. Thompson and Chaney made me eager to correct my data labels. There was so much information that I began to wish for detailed handouts.

The mini shell show demonstrated how exhibits could be constructed and generated ideas for future exhibits of my own. The silent auctions were a chance to dabble in friendly competition, while the door prizes and raffles were times of high anticipation. Would a lucky number be mine?

The main auction drew both spectators and bidders. Midway, the bidding pace reached fever pitch when a professional auctioneer took over. From then on, it was a race to see who could get his placard up before the auctioneer cried "SOLD!" It was not a time to be timid or faint-hearted.

The Club Rep meeting gave me a chance to see what other clubs were doing to spread the word about COA — it was animated but a little spicy for my digestion. At the General Business Meeting, I got to see COA leaders in action — interesting and informative — but our thoughts were really on the Dealers' Bourse, next to come.

The Bourse is hard to describe. Even before the doors opened, buyers gathered like nervous thoroughbreds waiting for the race to start, pacing with anticipation and anxiety, afraid someone else would win the race to that special prized shell. However, there were enough prizes and surprises for all. The array of dealers, shells, books, arts and crafts was enough to drain the wallets of many a veteran sheller.

The week came to a close with a full course banquet amid new friends and confidential discussions on which fork to use first. And if it is true that "a merry heart does good like medicine" (Proverbs 17:22a), then guest speaker Russ Jensen dispensed the final Rx to the meal and the week, a large dose of laughter with his slide presentation of cartoons about shells and shellers.

Yes, the Convention was a success, from the tempting hors d'oeuvres of new places to shell, to the side dishes of the mini shell show, auctions and field trips; from the meat of the symposium and workshops to the delicacies of the Bourse and the crowning dessert of laughter a la Jensen. There were even after-Convention "mints": shelling on Cumberland Island or rummaging through shell cabinets in the Florida Museum of Natural History.

When asked what impressed me the most, I stopped to think. For a sheller, even a frustrated one, the logical answer should have been shells, from exhibits to presentations, auctions, bourse or beaches. But what had impressed me the most were the people. People from all over the U.S. and the world. A spirit of camaraderie that made me feel at ease and at home. A willingness to share oneself, one's time, one's knowledge, to listen to a novice like me. I shall dearly miss this fellowship.

Did I say this fantasy was lived without regret? Wrong! I regretted that it had to end. Would I encourage others to attend a COA Convention? Let me be succinct. Yes!!! You bet! You'd better believe it! You can depend on it! Of Course! Definitely! No Doubt about it! And do I plan to indulge again next year? In the words of my local South, "The Lord willin' and the creek don't rise." See you there.

404 Sobotka Street, Hartselle, AL 35640. Glen Deuel, COA Past President and editor of the North Alabama Shell Club *Nautiloid*, sent us this article a while back. We've saved it until convention registration time for all you shellers who have never attended a convention. If all the great field trips and speakers and the beautiful convention venue don't convince you that COA conventions are for you, Deborah ought to do so.

FOR SALE:

Glory of the Sea Cone, *Conus gloriamaris*, from Papua New Guinea. Fine condition. 5" long, spire intact, lip a bit rough at siphonal end; a naturally repaired growth scar. **MAKE OFFER**. Send SASE for photo. S. Clark, 517 S. Lincoln, Hillsboro, KS 67063.

LAND SHELL LITERATURE

To accurately catalog and curate a collection of land shells, ideally one would need access to another well-curated collection or a vast malacological library. A catalog with current taxonomy, cross-referenced to pertinent literature would be indispensable in the curating process.

Leonard Richardson is one of the most prolific compilers of such catalogs of information. His work is currently being published in *TRYONIA*, Misc. Publications of the ANSP, as a "Catalog of Species." To date he has cataloged 11 families of pulmonates in 10 volumes, with another volume (*Bulimulidae*) to be published in the near future. The families covered to date include: *Helicidae* (Tryonia 3, 697 pp.), *Helminthoglyptidae* (Tryonia 6, 117pp.), *Bradybaenidae* (Tryonia 9, 253 pp.), *Oreohelicidae* (Tryonia 10, 30 pp.), *Camaenidae* (Tryonia 12, 479 pp.), *Polygyridae*, *Corillidae* and *Sagdidae* (Tryonia 13, 217pp.),

Streptaxidae Pt. I & II (Tryonia 16 & 18, 326 & 154pp.), *Partulidae* (Tryonia 19, 96pp.), and *Urocoptidae* (Tryonia 21, 245 pp.).

Though not illustrated, these catalogs represent the most complete gathering of information about these families to date. Richardson, himself a collector for many years, was able to learn from world-renowned malacologists like Pilsbry, Baker and Abbott. In fact, he started compiling information in the early 1960's through the encouragement of Dr. Abbott. The library of the Academy of Natural Sciences, Philadelphia, one of the largest malacological libraries in the U.S., second only to the Smithsonian holdings, was the resource he used to compile his catalogs.

What is involved in cataloging a family of pulmonates? Leonard Richardson gives some insights into this often difficult and time-consuming process.

—R.G.

PREPARING A "CATALOG" — TRYONIA: CATALOG OF SPECIES

by Leonard Richardson

In the mid-fifties Dr. Abbott, Chairman of the Department of Mollusks at the Academy of Natural Sciences of Philadelphia (ANSP), suggested a project that involved a great deal of library work. Finding the desired information in the library appealed to me, so other library-based projects followed. These studies were possible because of the wonderful Library of the ANSP and the excellent staff, who showed me how to use the central card file. This card file was started in 1812, and each succeeding librarian has had different ideas on how to index (they have an active project to update the file cards). Most of the time I could find a desired paper, but not always. In those cases, usually a staff library person could locate it if it was in the ANSP; if not, the staff would uncover it by means of the national computer data base called OCLC and obtain a copy through the Interlibrary Loan System.

Over the years I prepared *Outline of Phylum Mollusca* (1964), a two-volume systematic arrangement of the Phylum down to the genus level, with index. It handles the data in a Dewey Decimal System and includes both recent and fossil taxa. A bound copy is in the Malacology Department Library at the ANSP.

Next came *Author's Index* (unpublished). This was contained in large looseleaf notebooks in which titles, abstracts, and references of most articles in Malacology are cut and pasted chronologically under the author's name. These "paper dolls" constitute a most useful 20-foot shelf of books.

Publication Dates (unpublished) followed, a three-volume compilation of dates of publication of scientific periodicals, books, and sets of books. It also lists the call numbers for those publications in the ANSP library stacks. I did all of this work by hand, the old-fashioned way; the better way would have been to put it on a computer, but I don't understand computers and they don't understand me. The notebooks in my work area in the ANSP began to take up enough space to cause comment. I used them extensively, as did other people who came to me to find specific information.

My latest projects have been to prepare "catalogs" of land snails by families and publish them in *Tryonia*, the miscellaneous publication of the Department of Malacology of the ANSP. Much time is required to prepare a "catalog," but I have the time for this sort of thing, one of the advantages of retirement. The *Tryonia* is expensive to publish, and several years usually elapse between submission and publication, two regrettable circumstances.

A "catalog" (a comprehensive bibliography for each taxon of a family) follows a specific arrangement: sub-families are arranged alphabetically. Under each sub-family, the genera are also arranged alphabetically (sub-genera are not used). Under each genus, the species follow the same alphabetical arrangement. Under the species may appear other taxa,

preceded by a plus (+), names that have been used in association with the species and may be synonyms, sub-species, forms, varieties, errors, etc. A bibliography and index are included.

On the subject of preparing a "catalog," I offer the following suggestions: of the few basic tools needed, one is a good classification system. Vaught (1989) published the most recent and complete classification of mollusks, from classes to sub-genera and synonyms, through 1987. My 1964 *Outline of Phylum Mollusca* was also very useful. I employ the *Zoological Record* (1864 to date), particularly the "Authors" and "Systematics" sections. One also needs quantities of paper (scrap paper that has already been used on one side works fine). Lastly, one needs LOTS of TIME, PATIENCE, and DRIVE to complete the "catalog."

The first step is a long one. I make a complete literature search of the *Zoological Record*. This entails making a copy of each pertinent article or making copious notes. Some papers refer to other publications in the text or in their bibliography. I note these and, in this way, pick up references that I have missed. I file the papers chronologically. (You certainly can fill a lot of notebooks doing this!)

The next step is easier: I prepare a systematic outline of the family, using a separate sheet of paper for each name in the outline, down through genus level. Now I have many, many sheets of paper which I put into loose-leaf notebooks in the appropriate order.

The third step is another time-consuming one. I study each publication and post relevant references to the appropriate sheet of the systematic family outline. As required, I start a new sheet of paper for each species and for each plus, and arrange them alphabetically.

I find it helpful to start with the latest references and work back to the early ones. I have also noted that authors systematize differently and that the same taxon may be posted in several different locations. That is okay. I correct it in a later step after the Index has been prepared. I have also found that some references contain errors, or so little information that considerable judgement is needed as to whether they should be recorded at all.

Then it is indexing or sorting time. I copy each taxon to be indexed, along with author, date, and other information, then cut them into strips and hand-sort them into twenty-six first-letter piles. I then resort each "first-letter pile" based on the second letter. The sorting continues until the piles are smaller and more manageable. Eventually I arrange each strip alphabetically and paste it in the "Index." Here is the step where I turn up duplicate index entries for some taxa. I resolve these duplications by studying the references. Usually, I give the latest paper priority, particularly if the writer has given a good reason for the placement and is a well-known and respected authority.

(Continued on page 22)

PREPARING A "CATALOG" — TRYONIA: CATALOG OF SPECIES

(Continued from page 20)

It takes a real eagle eye to find and correct all errors. Are the parentheses used properly? Is the Type designated for each genus? Is the right century used, i.e. 1859 vs 1959? Have all the manuals, handbooks, iconographs, reprint files etc. been checked? There are minute differences to be careful about, such as a one-letter change in spelling or a variation in date by one or two years. I probe figure numbers and page numbers, as these often contain a clue indicating that different taxa with the same name are involved.

After I complete the correct placement in the systematics for all taxa, I begin work on the Bibliography (the usual procedure of listing, cutting, sorting and pasting). My wife puts the final results on the computer and, eventually, it is on its way to the editor of *Tryonia* and (hopefully) publication.

My notebooks are stored at the ANSP, where others seeking specific information can use them. The object of my work has not been to fill notebooks, but to provide helpful material. I praise God that I am able to continue my work with much excitement and pleasure.

About the Author

Leonard Richardson, c/o Department of Malacology, ANSP, 19th and the Parkway, Philadelphia, PA, 19103, born in Cape Charles, Virginia in 1911, studied Chemistry and Chemical Engineering, obtained a job with the DuPont Co. They joined the Philadelphia Shell Club, met Dr. H.A. Pilsbry, Dr. R. Tucker Abbott, Dr. H.B. Baker and others. Both spent an occasional Saturday at the Academy of Natural Sciences doing odd jobs in the Malacology Department. Leonard became interested in exchanging shells with other collectors (about forty people world-wide). The collection grew to some 20,000 lots, but was sold when he retired in 1973.

COME SHELL THE FLORIDA PANHANDLE

(Continued from page 19)

FRESHWATER SHELLERS

Every stream in the Panhandle is different in terms of its mollusks, and we are going to visit two during the Convention. The first is located 45 minutes north of the convention site in the town of **Vernon**. The stream issues from the Florida aquifer via a cave, and that is where your canoe trip begins (you can "tube" it, but aquifer water is cold even in July). The 3.5 hour trip passes through a variety of habitats where 17 gastropods and 19 bivalves have been collected in the past. Needed here are a dip net for scooping up your finds, paddling ability, a sense of balance, and the ability to right a canoe in case you lied about your sense of balance. Actually the trip is not difficult as the current provides enough propulsion and the stream is not deep. You can even snorkel if you like — just remember that water temperature.

The second site is **Dead Lakes Dam**, the locale of a wild expedition you must get Harry Lee to tell you about. The mollusks here are almost entirely different than those at Vernon and include a wide variety of bivalves. You have to work your way down a bank to reach the river, but it is not overly steep. The area is quite muddy, so once again old clothes and old shoes are in order. It is also a long haul from Panama City Beach — 1.25 hours, and the water level must be down for it to be productive. The word "drought" has a nice ring to it.

You probably noted that we haven't mentioned terrestrials in this summary — there is a valid reason. While some of them are found everywhere in the area, they are most abundant in areas of limestone outcroppings. The best, most surefire "we-know-they-are-there" outcropping is in the middle of the Mariana Caverns State Park. Due to Florida law, collecting in this area is prohibited and we can't set up a formal trip with such a purpose in mind. You might want to visit the park on your own, however, as it is very interesting and the seldom-used nature trails are very scenic....

We hope that this summary has answered most, if not all, of your questions regarding the various field trip sites available during Convention '93, and that you are able to make informed choices as to what you want to do. More information will be given via programs presented during Monday of the Convention. Let's go shelling!

THE ANNULARIIDAE

by Richard L. Goldberg

The Annulariidae are neotropical prosobranch gastropods closely related to the Old World Pomatiidae. This diverse family of operculates range from lower Florida, the Bahamas, Greater and Lesser Antilles, and on the mainland from Vera Cruz, Mexico, south through Central America to Bolivia. The family shows the greatest speciation and diversity in the Greater Antilles.

In 1920, Henderson and Bartsch made the first attempt to organize the American "Cyclostomidae," as the Annulariidae were formerly known. They first proposed the separation of the New and Old World species and erected the new family name Annulariidae. This new arrangement was based on a constant radular difference they observed in the animals of this group. There has been controversy surrounding the validity of separating the Annulariidae from its Old World relatives. The Pomatiids include genera like *Tropidophora*, *Pomatias*, and *Revoilia*. Subsequently, a number of authors declared the differences inconsequential, and once again lumped the Old and New World genera under Pomatiidae. In 1978, after detailed anatomical studies on representatives of both families, Thompson pointed out that even though Henderson and Bartsch had some flawed data on the radular differences, the radula and the reproductive and nervous systems do support separation of the two families.

Torre and Bartsch (1938-1941) separated the diverse Annulariids into four subfamilies, 57 genera and 49 subgenera. Solem (1961) stated there were 110 genera and subgenera applicable to this family. Most recently 5 subfamilies, 27 genera, and 20 subgenera are recognized (Vaught, 1989). Over 600 species have been described, the greatest number found in Cuba (332), Hispaniola (133), and Jamaica (67). Lesser speciation is found in the Bahamas (45), Central America (17), South America (7), Puerto Rico (7), and other Caribbean islands (30).

The shell shape varies from depressed helicoid to elongate conic. Surface sculpture is sometimes smooth, or may exhibit axial ribs and spiral lirae. Adult specimens always lose the weak nuclear whorls, leaving a truncate shell. The peristome or lip structure is often the most spectacular feature of the Annulariids. Some species exhibit a broadly expanded outer lip, sometimes with concentric lamellae, or with the outer edge fluted or recurved backwards. In some species the lip is intensely colored — in others, the lip is simple and unexpanded. Annulariids, like other prosobranchs, are sensitive to variations in habitat and moisture, causing extreme variation of species in separate populations.

The structure of the spiral operculum varies from simple to rather complex. Torre and Bartsch (1941) used the opercular sculpture (granular calcareous deposits, ribs, lamellae or combinations of these characters) to differentiate subfamilies. All of the Annulariid opercula share in common a corneous base from which the calcareous operculum structure is built in layers.

The animals of the Annulariidae are as interesting as the shell and opercula structure. As with all prosobranchs, the Annulariids have eyes near the base of single tentacle stalks, often with red to orange tips. The operculum is attached to the posterior end of the foot. I have observed the crawling motion of a number of Jamaican Annulariids, and have seen the operculum used as a support or seat to balance its shell, which is proportionally large in comparison to the small foot (figure 1). Interestingly, the sole of the foot is divided lengthwise by a median furrow (figure 2). The animal walks on the edges of the foot with the two halves moving independently in a waving motion from the posterior to anterior end (figure 3). The mollusk gives the impression of swaying, shuffling and gliding. The animal can lift the shell high off the back of its foot (see **Compendium of Land Shells**, pg. 230). When changing direction abruptly, the shell

swings rapidly into position, twisting and turning until it balances again on its operculum.

The Annulariidae are limestone dwellers. They inhabit crevices of limestone rocks, or live under limestone scree and talus rock, and occasionally they are found in leaf mold associated with limestone areas. The limestone-loving Annulariids are scarce if not absent in areas of igneous and metamorphic rocks, as in the Blue Mountains of eastern Jamaica where only one of the 67 Jamaican species is represented, or the geologically similar Cordillera Central of Hispaniola where the Annulariids are absent. The distribution of many Annulariids tends to be limited or disjointed, depending on the presence or absence of limestone. In Jamaica, the karst topography of the Cockpit Country (see *American Conchologist*, Vol. 16, No. 1, 1988, pg. 5) harbors some of the most well developed and beautiful Annulariid species (figure 4).



Figure 1: *Adamsiella (A.) miranda* (C.B. Adams, 1849) — the operculum is attached to the posterior end of the foot. [Photo by Richard Goldberg]

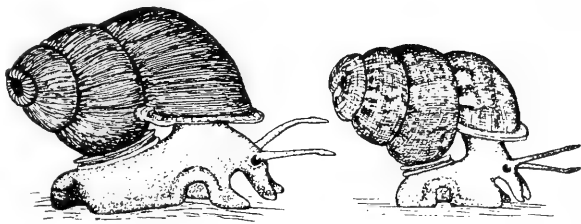


Figure 3: The animal walks on the edge of the foot with the two halves moving independently in a waving motion. left: *Tudora brononii*; right: *Adamsiella irrorata*, both from Jamaica. [from Brown, 1910].

An unusual habit of some Annulariids is to crawl up foliage and hang from leaves by a mucous thread. (During an excursion to Jamaica, I met a producer and cinematographer from the Richard Attenborough "Life On Earth" series who were scouting locations to film this odd behavior of the Annulariids.) Solem (1961) felt this odd behavior facilitated dispersal by wind or storms. I have personally observed this method of aestivation with species having only a slightly expanded lip such as those in the genera *Parachondria* of Jamaica, and *Licina* of Puerto Rico. The species with broadly expanded or fluted peristomes tend to stay in the limestone rocks.

The Annulariidae featured in this issue's photo essay centerfold illustrate just a handful of the more spectacular members of this intriguing family

Figure 2 (left): The sole of the foot is divided lengthwise by a median furrow. [from Dean, 1928]

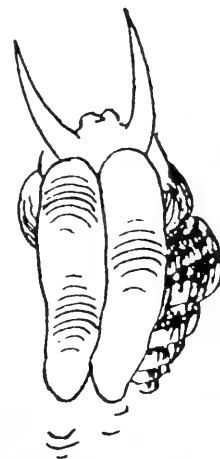


Figure 4 (below): *Annularia (A.) fimbriatula* (Sowerby, 1825) - Cockpit Country, Jamaica; 15mm; showing many of the Annulariid features (truncate spire, spiral sculpture, fluted peristome, operculum attached to posterior of foot, eye at base of single red tentacle stalk). [Photo by: Richard L. Goldberg]



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BACK FROM THE BRINK? —Studies on Hawaiian Tree Snails

by Sharon Kobayashi



Achatinella redfieldii [Photo courtesy of Dr. M.G. Redfield]

BACKGROUND

Students of natural history have long been attracted to Hawaii's tree snails because of the striking variety of shell color and banding patterns. Unfortunately, more than twenty years ago, Kondo (1970) estimated that at least 50% of the Hawaiian terrestrial snail species had become extinct since western colonization of the islands. Causes of this massive decline include habitat loss, shell collectors, and, most significantly in recent times, predation pressures (Hadfield, 1986). Introduced rats and the carnivorous snail, *Euglandina rosea*, appear to be quickly decimating most of Hawaii's remaining terrestrial snails.

Hawaiian tree snails of the subfamily Achatinellinae (Family Achatinellidae) are unique to the Hawaiian Islands. There are four genera within the subfamily: *Achatinella*, *Partulina*, *Newcombia* (*Nucombia*), and *Perdicella*. Achatinellines are hermaphroditic and live-bearing, and feed on fungi that grow on leaf surfaces of native host plants. As a result of evolving in a relatively mild and stable, predator-free environment, achatinellines have no discernable defenses against predation, are slow growing, and have a relatively late age at first reproduction and a low fecundity (number of offspring produced) as compared to other terrestrial snails. For instance, Hadfield (1986), estimated the fecundity for *Partulina redfieldii* to be 1-4 offspring per adult per year, birth size to be 5.12mm, and earliest sexual maturity to occur at approximately 4 years of age. While these unusual life-history characteristics make this group of snails extremely interesting to biologists, they also make these animals extremely vulnerable to environmental perturbations.

On January 13, 1981, the entire genus *Achatinella*, endemic to the island of O'ahu, was placed on the U.S. Fish and Wildlife Service Endangered Species List, the first taxon above the level of species to be so listed. The Draft Recovery Plan (unpublished) for *Achatinella* signals the necessity of a captive propagation facility; such a facility was established in 1986. The ultimate goals of this facility are to perpetuate as many species of achatinelline snails as possible, and eventually to reintroduce these animals into their previous ranges when environmental conditions become more favorable (i.e. when predators are brought under control). To that end, it is necessary that the captive propagation program create laboratory conditions conducive to optimal growth, fecundity, and survivorship of captive populations. The study described here is an effort to add to the understanding of the biological needs of these animals.

Sharon Kobayashi, Zoology Department, University of Hawaii, is a 1992 COA Grant recipient for her fecundity studies in Hawaiian Tree Snails, Achatinellidae.

EFFECTS OF ENRICHED FOOD SUPPLY ON GROWTH AND SURVIVORSHIP

The purpose of this project is to determine whether increased food availability enables juvenile *Achatinella mustelina* and *Partulina redfieldii* to grow at an accelerated rate as compared to individuals under the same laboratory conditions provided with only a naturally occurring food source. The animals are kept in screened terraria inside environmental chambers set to emulate field conditions. All terraria are provided each week with fresh leaves and branches of *Metrosideros polymorpha*, a natural substratum for the snails. The food enrichment group is also provided with fungi grown on potato dextrose agar. The original stocks of the laboratory cultured fungi were obtained from the leaf surfaces of native plants.

The data indicated that increased food availability does enable both *Partulina redfieldii* and *Achatinella mustelina* to grow faster in the laboratory. The implication of the results is that food availability may be a major factor limiting growth in the field as well. However, both species, even under optimal conditions, still have growth rates lower than those observed for other terrestrial groups of snails, suggesting that there is some genetic component to growth rate. The study animals will continue to be monitored until sexual maturity, at which point growth ceases. This next portion of the growth study will address the question of whether faster growth will enable *P. redfieldii* to attain sexual maturity at an earlier age. These data will be especially meaningful to the operation of the captive propagation facility, as earlier onset of sexual maturity may translate to more offspring per snail over the individual's lifespan.

EFFECTS OF ISOLATION ON FECUNDITY AND SIZE AT BIRTH

Because predators in the field may greatly reduce the populations of achatinelline snails and thus decrease the opportunities for individuals to mate, an assessment of the effects of such reproductive isolation on *Partulina redfieldii* is another purpose of this project. The snails used in this segment of the study were collected as adults in the field in June, 1989. After more than 3.5 years without opportunity to mate, they continue to produce offspring. Preliminary analyses reveal that the birth rates exhibited by isolated animals are comparable to the estimates for field populations. There also appears to be no indication of decline in birth rate, nor birth size. In other words, there is no evidence that they will stop reproducing anytime in the near future.



Achatinella mustelina
[Photo courtesy of Sharon Kobayashi]



Achatinella mustelina
[Photo Courtesy of Sharon Kobayashi]

The mechanism which allows *Partulina redfieldii* to propagate for long periods of time without encountering mates remains unknown. These animals may be capable of storing sperm for long periods of time after mating, or of fertilizing their own eggs. The implications of these findings are encouraging: very low densities of animals in the wild may be capable of recovering from environmental catastrophe, if given the opportunity. These data are significant, because the need for, and occurrence of outbreeding is a large determinant in understanding minimal viable population sizes of endangered species. Application of data such as these to population management will, hopefully, give many more generations of naturalists the opportunity to enjoy these gems of the Hawaiian rainforests in the wild.

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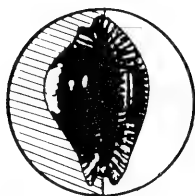
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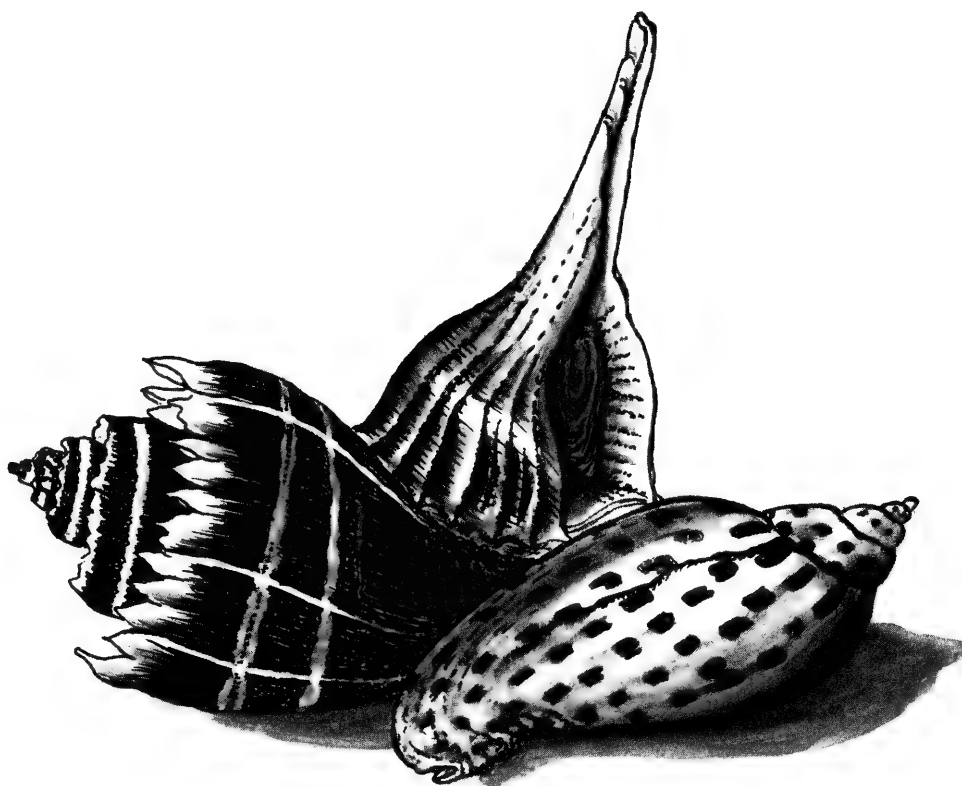
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QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 21, NO. 2

JUNE 1993



In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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MEMBERSHIP: Memberships are for the calendar year, January through December. Late memberships shall be retroactive to January. **DUES:** (per year) INDIVIDUAL (USA, Canada, Mexico) \$12.50; FAMILY & CLUB/ORGANIZATION (USA, Canada, Mexico) \$15.00; CARIBBEAN, SOUTH & CENTRAL AMERICA (via Airmail) \$20.00; COUNTRIES OUTSIDE THE AMERICAS (via Airmail) \$25.00. Make checks payable to CONCHOLOGISTS OF AMERICA. Please pay in U.S. dollars or with a check that has Transit Enrouting and Account Numbers printed at the bottom of the check, or with a money order; send to Bobbie Houchin. **RENEWALS** are sent to the TREASURER, Walter Sage. **BACK ISSUES** are available from PROPERTIES DIRECTOR, Hank Foglino, 4 Trent Court, Smithtown, NY 11787. Prior to 1985 - \$1.50 each; 1985 to current - \$3.00 each.

COVER: John O. (Jack) Dennis from Mobile, Alabama, contributed this ink and wash, drawn from shells indigenous to the northern Gulf of Mexico in his and his wife's collection. John, husband of Shirley Dennis, the founder of the South Alabama Shell Club, is a self-taught artist. He will soon retire from the Illinois Central Railroad and has plans to enter the art field full time. He is presently working part time designing program covers, Mardi Gras floats, T-shirts, etc. The shells pictured are, clockwise from the top, a juvenile *Busycon contrarium* (Conrad, 1840); *Scaphella junonia johnstoneae* Clench, 1953; *Melongena corona johnstonei* Clench and Turner, 1956; and, in the lower right hand corner, *Littorina irrorata* (Say, 1822).

PRESIDENT'S MESSAGE

A matter of increasing concern to collectors world-wide is the number and type of restrictions placed on collecting mollusks. Hardly a month goes by that I don't hear of or read about another area being closed or strict regulations imposed. Whether it is local, state or national, there are fewer opportunities to collect. Even fossil areas are under attack or being closed.

Many laws or ordinances are ambiguous, confusing, and not well thought out. Just read our Florida "fishing law" and you'll get the idea.

I would say without hesitation that the vast majority of amateur and scientific collectors, as well as many dealers, are extremely conscious of protecting our environment and conserving species.

A number of COA members have expressed their concerns about this situation. Our Board will be addressing this subject to a greater degree in the future. Any comments or suggestions you may have would be most welcome.

On a personal note, I sincerely appreciate the many cards, letters and calls from COA members and clubs on the death of my husband, Bob. Your support and caring mean more than words can say.

Looking forward to seeing you ALL in Panama City!

Sincerely,

DORIS

EDITORIAL

When Mari Hughes wrote me a postcard early this year, "not for publication" but for me to "kick around," complaining of the smallness of the type in American Conchologist, I thought, "Oh, Shell (the sometime substitute for stronger language I'm trying to adopt in moments of American Conchological stress)! Just what I need! Another problem to solve, another complaint to answer!" But in the very act of thinking curses upon complainers, it occurred to me that I myself had been having difficulty reading the xerox proofs I get — xerox not being as clear as our typeset magazine. I didn't remember that problem bothering me in the past, so I took a closer look at the matter. Comparing magazines back to 1987, when I began as Editor, I uncovered a case of insidious type shrink. Down had gone the leading, down the kerning, (typesetting terminology for those spaces between letters and lines and such) down had crept the very type size of our text. From issue to issue, printing firm to printing firm, we'd been getting more and more in, at the expense of legibility. And I hadn't even been aware of it! This issue sports a new size and spacing. THANK YOU, Mari Hughes! You had the great good sense to complain when it was necessary. We hope this pleases you, and all the rest of the poor squinters suffering in silence out there.

*The COA and all its members
extend our sympathy to
our President, Doris Underwood,
on the death of her husband*



Robert B. Underwood

April 9, 1993

CONVENTION '93 UPDATE

by Linda and Jim Brunner

The 21st Conchologists of America Convention is just around the corner (July 11-17) and things are starting to get a little hectic in the Panama City Beach area. To keep you on top of late breaking items, here is a convention update.

REGISTRATION: Early registration will take place on Sunday, 11 July from 1-8 p.m. in the atrium of the Convention Center. Please register for your Edgewater room first so that we can get your room number when you register for the convention. That will allow us to issue a "who's where" list on Tuesday.

EARLY BIRD SPECIAL: Sunday 1-5 p.m. (only). Sol Weiss will have another of his fabulous BARGAIN SALES. Thousands of items to choose from at unbelievably low prices.

WELCOME PARTY: Monday, 6:30 p.m. Get out those shell shirts and dresses and let's have a contest! Prettiest, ugliest, brightest, whatever — we'll have a category to suit you. Walter Sage is so sure of winning that we may have to make him a judge.

FIELD TRIPS: Lots of tidbits here. Divers — maximum depth for dives is 80'. Each trip is two dives, one deep and one shallower. Snorkelers — depth is from where you personally scrape bottom to about 8'. We have square miles of 3-4' areas. Fossilers — rejoice! After five years of searching we have found Farley Creek and gained permission to dig! One hour's work turned up several perfect *Cypraea*, 2 *Morum chipolanum*, several bivalves previously known only from fragments, and from the strange world of strombs, several perfect Gabbi's. What's a Gabbi? See the fossil display at registration to find out. Fossilers will need to sign an APAC-like liability waiver for this site. **ALL TRIPPERS:** Pick out your best find and enter it in your field trip category to win a "Find of the Day" award. Daily winners are eligible for a "Find of the Week" and "Find of the Convention" awards.

P.O. Box 8188, Southport, FL 32409

The 1993 COA Nominating Committee, consisting of Chairman Marion Deuel, Horatio Buck and Travis Payne, have announced the following slate of officers for 1993-94:

President	DORIS UNDERWOOD
Vice-President	LINDA KOESTEL
Secretary	BARBARA ELLIOTT
Treasurer	WALTER SAGE
Trustee (2 years)	HORATIO BUCK

A second Trustee, Lucy Clampit, still has a year of unexpired term to serve on the Executive Board. Officers will be elected at the General Business Meeting at the 1993 Annual Convention in Panama City, July 11-17.

ROOMMATES: We swore we weren't going to do this — but we are anyway. This isn't a summer camp and we aren't going to assign you to someone, but we will act as a clearinghouse. If you can't find a roommate, call us at (904) 265-5557 after 4 p.m. CST and we will give you the names of those seeking roomies. You will have to contact them to see if you are compatible and work out arrangements.

PARDON OUR ERROR: As some of you have been tactless enough to point out, there is an error on the Field Trip Registration Form. Next to "Costs: Waders" where it says "Wed. & Thurs., no fee" it should read "Tues. & Wed., no fee." **DEALERS:** The outlet fee on the Bourse Form is \$10 for the entire Bourse — not per day.

EDGEWATER PAYMENT POLICY: Edgewater will figure out each person's share of the cost if and only if all of you sharing one unit arrive and depart on the same day. Otherwise, the person reserving the room will have to make the total payment. We suggest you discuss this with your roommates either before or early in the convention to avoid misunderstandings.

AIRPORT TRANSPORTATION: Edgewater has van service to and from the Panama City Airport at a cost lower than a cab and really lower if several persons share it. Call Missie at 1-800-239-4853.

DONATIONS: Donations are still needed for doorprizes, silent auctions, and the Mother of All Auctions. Dig out those goodies and send them to Jim and Linda Brunner, P.O. Box 8188, Southport, FL 32409.

A PERSONAL PLEA: All this coordination is being done by two harried schoolteachers who, at this time of the school year, are close to nervous breakdowns anyway. Don't push us over the edge — **REGISTER EARLY!!!**

RECOMMENDED CHANGE TO COA BYLAWS

At the request of President Underwood a change has been approved by the Board of Directors to Chapter 5; VACANCIES of Directors have very explicit directions for the filling of positions with the exception of the immediate Past President, who is an essential member of the Executive Committee. The proposed change is:

ADD: Sec D. In the event the immediate Past President is unable or declines to serve on the Executive Committee, the next preceding Past President available will fill the position.

This addition will be voted on at the Annual Meeting at the convention in Panama City.

John A. Baker, Parliamentarian
Chairman, Constitution and Bylaws Committee

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Shell collectors frequently decry the gap in understanding between amateurs and trained professionals in malacology. They feel that the scientific community could learn from amateurs who spend valuable observation time in the field.

They complain that the scientists are indifferent to their interests and needs. Not so, says Dr. Eugene Coan. He recounts the valuable work of many amateurs in the field of malacology on the West Coast, and he deplores the trend away from this resource. Giving a variety of reasons for professionals to encourage and employ amateurs in malacology, he also enumerates practical ways for them to do so.

Gene Coan originally wrote this classic piece for the American Malacological Union 1988 Annual Meeting at Charleston, South Carolina as part of its Symposium on the History of Malacology. Carol Hertz then published it in the San Diego Shell Club's *The Festivus* [Vol. XX(10):94-103] later in 1988 and Tom Rice republished it in *Of Sea and Shore*. In July of 1991, Dr. Coan again delivered it as an address, this time before the First Latin American Congress of Malacology in Caracas, Venezuela. Finally we re-publish it in *American Conchologist* for all of you who weren't fortunate enough to hear/read it in one of its previous lives.

THE ROLE OF THE AMATEUR IN THE DEVELOPMENT OF MALACOLOGY IN THE WESTERN UNITED STATES

by Eugene V. Coan

The theme I pursue in this talk is that the amateur has played a particularly significant role in the development of the science of malacology on the west coast of the United States, this for a variety of reasons, some unique. I'll outline the reasons for this involvement and its chief personalities. Then I'll explain why I think the role of the amateur has declined in recent years, to the detriment of malacology. However, I'll also point out that this situation can be improved.

First, there is the matter of definitions. Here, I encompass within the term "amateur" all those who are not paid specifically for their work in malacology. Amateurs thus include some who have had professional-level training but who either had jobs in other fields, or were sufficiently well off not to have to generate income by any occupation. The term "non-professional" might be used, but that term also implies work badly done and that would confuse matters. The term "amateur" picks up this second meaning only when converted to the adjective "amateurish" which I have avoided.

Secondly, I would not argue that the western United States is in any way entirely unique. I am sure that, to some extent, the things I am pointing out are true on the east coast of the United States, and in Europe, Australia, New Zealand, and elsewhere. However, the situation is sufficiently unique on the West Coast to see clearly some important factors and to draw from them some more universal conclusions.

The reasons I give for the unusual importance of the amateur in West Coast malacology are the fact that the fauna was not encumbered by much earlier and confusing work, that the work on the West Coast remained well grounded in the methodologies of Europe and the East Coast, that there were frequent compilations and handbooks that

placed important information in the hands of the public, and that there was a tradition of volunteerism and involvement that characterizes newly settled areas.

The first factor, then, that made a difference was that most of the fauna of this coast and the eastern Pacific was not described until after 1850. Thus, there were few entanglements with confusing early literature in diverse languages with cryptic descriptions, bad figures, and unobtainable or missing type specimens. This meant that the fauna was a relatively clean slate. (It remains amazing to me to see how long the past continued to plague the present in Europe and elsewhere with endless paragraphs of speculation about what name goes with which species and with continuing taxonomic questions that should have been solved by locating type material, by neotype designations, petitions, or arbitrary but clear choices.)

Aside from light touches by a few early voyages, the study on the West Coast began with the contributions of several key amateurs. The first was the botanist Thomas Nuttall. On his overland trip to the West Coast in 1834-1836, Nuttall collected many marine mollusks and brought them back to the East Coast, where they were named by Timothy Abbott Conrad. We'll call Nuttall the West Coast's first amateur, since his chief interest was botany. He illustrates what has been one of the most important roles of amateurs — collecting. He brought back shells tied, though with some mix-ups, to particular stations on the West Coast. Most of the types of these taxa are in the British Museum.

The next West Coast amateur was truly unique, for he never visited the West Coast. That was Reverend Phillip Pearsall Carpenter. His work in malacology began with a purchased collection of mollusks from Mazatlan, Mexico, which he studied in England to



Thomas Nuttall



Phillip Pearsall Carpenter



James Graham Cooper

provide diversion from his ministerial duties. As time went by, however, his malacological work took an increasing proportion of his life, but almost all of his voluminous work on the marine fauna of the eastern Pacific was undertaken as a hobby, and it came to include three major books and many papers.

Almost all of his species are represented by types in the British Museum. Carpenter's work illustrated the careful and painstaking studies that amateurs can conduct. He undertook an amazingly thorough literature search about the fauna of the eastern Pacific and the western United States, used comparative material available in Britain, studied the collections of the USNM, and described many of his new taxa based on suites of specimens, noting variation. His work was of a level equal to the best professionals of his time, and he drew conclusions about biogeography and evolution from it.

The third major amateur was James Graham Cooper, about whom I prepared a biography a few years ago. He made his living chiefly as a physician. He participated in one of the Railroad Surveys in the 1850's, on which he collected some mollusks along with material of other animals and plants. He settled in California in the 1860's, working for a while for the California Geological Survey as its zoologist. During this time he became increasingly interested in malacology, but after the Survey died, his interest had to remain at amateur level while he earned a living in medicine. He described many taxa from the marine, land, and freshwater faunas, as well as many fossils, and most of his types are available for study. His career demonstrates how difficult it was for dedicated malacologists to find employment in biology, even a century ago. He persisted in spite of the obstacles — as many others have done since then — to make a major contribution.

I pause from my description of early workers to make a second general point about the work of amateurs on the West Coast fauna. The work of these early malacologists was well grounded in the methodologies of Europe and the East Coast. These men were not reinventing the wheel, nor were they taking off on bizarre tangents. They were fairly restrained in proposing new taxa, particularly genera. They saw the relationships to previously described taxa and were as interested in outlining relationships as in demonstrating differences. Taxa were tied to type specimens, with descriptions containing differentiating characters. Moreover, work on fossil and Recent material went on hand in hand.

The next amateur that I would like to feature is Josiah Keep. Although he was a professor at Mills College, he was chiefly a teacher of geology and astronomy, and his work in malacology was as an amateur. His contribution was as a popularizer. The handbooks that he

published, written in a most engaging manner, were instrumental in interesting the public in malacology. Without them, West American malacology would probably have taken a very different path. He also gave public lectures and a summer marine biology course at Monterey. Such popularizing allowed interested members of the public to believe that science was within their understanding, not the remote territory of high priests.

I will here express my prejudice about what I call the "mystique of the professional," which characterizes many fields, including medicine, law, finance, auto mechanics, and many sciences. This mystique involves maintaining that there is a body of information and technique that is completely beyond the average mortal. Thus, public awareness and participation is undesirable. In the case of such professions as medicine, law, finance, and auto mechanics, the reason is economic. If the public cut through the masquerade, over-paid professionals would have less work. In the case of such sciences as malacology, the excuses are more subtle and have to do with snobbery and the fear that public involvement will mess things up. The exclusionary attitude, however, doesn't help and, in fact, probably makes things worse by promoting uncoordinated, competing activity and the proliferation of inaccurate publications that clutter the literature.

Of course, West Coast malacology had some less-than-completely-helpful amateurs. I have prepared biographical sketches, bibliographies, and lists of taxa of two amateurs who made extensive collections at least partly for sale. Their publications were not well grounded in science, and the names that they introduced contain a high percentage of synonyms. These were Henry Hemphill, a bricklayer turned professional collector, and Charles Russell Orcutt, collector and magazine editor. Hemphill introduced some 102 names, of which 66% were unavailable or are now regarded as synonyms. None of the names that Orcutt introduced are valid.

However, their material was mostly well located as to station and was sufficiently extensive to allow a study of variation. It was important in acquisition of West Coast material in institutions throughout the country. This material was relied upon extensively by such professionals as Dall and Pilsbry in their work on the West Coast fauna.

A unique story is that of Ida Oldroyd. She was an amateur in southern California, her husband earning a living in carpentry. She amassed a huge collection, through her own efforts and extensive exchange, and, after her husband retired, she talked Stanford University into acquiring her material, with her as its curator. Her chief contribution, in addition to the collection, was the publication of a set of four volumes that contained original descriptions and new illustra-

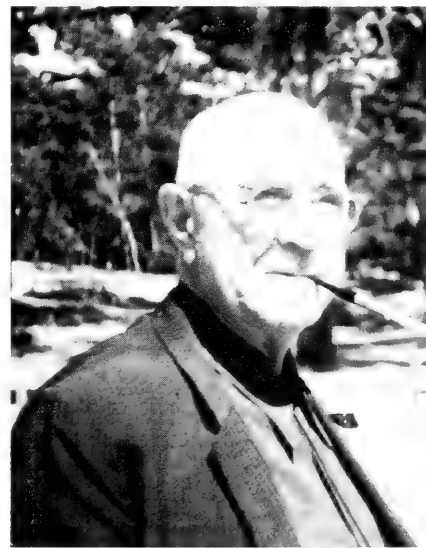
(Continued on pages 6 & 7)



Henry Hemphill



Ida Oldroyd



John Q. Burch

MALACOLOGY IN THE WESTERN UNITED STATES (Continued from page 5)

tions of the northwest American marine mollusks. Although it was not very carefully or critically prepared, it remained the only comprehensive work on the eastern Pacific fauna for many years. Such major compilations as hers served to put the state of current information in many hands and to stimulate original work.

For reasons that I don't fully understand, the amateurs who became involved in the scientific study of malacology on the West Coast have been an unusually productive bunch. I suspect that this was partly an outgrowth of the custom of sharing and working together that characterizes frontiers generally. For example, some workers started classes for themselves and worked together to produce their own materials. Nothing better illustrates this than the effort of John Q. Burch in the 1940's to produce a checklist of West Coast mollusks. This effort resulted in a substantive publication that contains much original material and was the product of the combined work of many individuals.

Important early workers included: Herbert N. Lowe, a florist, who worked on the fauna of the Panamic province with Pilsbry, and who published some 26 papers and some 167 taxa, most in collaboration with Pilsbry. George Willett, who was variously a policeman, soldier, fisherman, fox farmer and ornithologist. He published 39 papers and described quite a number of taxa, including several that he collected in southeast Alaska. A.M. Strong, a mining engineer, published many significant papers and authored quite a number of taxa, many in collaboration with Leo Hertlein. Fred Baker was a physician, who published a couple of dozen papers. Stillman Berry, of independent means as well as part-time rancher and iris grower, published 209 papers and authored 401 taxa. Wendell Gregg, a physician, published a number of papers on land snails. Allyn Smith worked most of his life for the phone company and published over 100 papers and many new taxa. Robert Talmadge, who worked for the Pacific Gas & Electric Company as a lineman in the rugged mountains of northwestern California, published some 95 papers. Emery and Elsie Chace, who had various jobs throughout their lives, he mostly in construction, published some 40 papers. Lorenzo G. Yates, a dentist, and Faye Howard each published a few articles, but both contributed major scientific collections to the Santa Barbara Museum of Natural History.

Of course, some of this body of work is of high quality, some is not. Some papers are just newsletter notes. Some names are now regarded as synonyms. But, collectively, it is a considerable amount of original work.

In more recent years, Myra Keen's book on the tropical eastern

Pacific fauna helped to draw many amateurs into malacology, not only because it stimulated collecting in that area but also because it posed many unresolved questions in a way that was approachable by the scholarly non-professional. Other handbooks, such as Jim McLean's pamphlet on the mollusks of southern California, have also helped. As a result, there is a very substantial number of people who went on to make significant contributions through their carefully made collections and their publications, including the recent work of Twila Bratcher on the Terebridae, that of Helen DuShane on the Epitoniidae, the many papers of Don Shasky, LeRoy Poorman, and Carole Hertz on the Panamic fauna, the important collection of Carol Skoglund, the photographic contributions of Bert Draper and the many contributions of the late Tony Ferreira to the study of chitons.

Several new factors have recently decreased the involvement of amateurs in the science of malacology on the West Coast. Collecting by the public is not permitted in California because of the effect that overcollecting was having on the marine fauna, and this has limited the introduction of young people, drawn by their curiosity about the natural world as well as acquisitiveness, to malacology. In many areas, the marine fauna has been severely depleted because of pollution and habitat destruction. There are shrinking professional resources, with some programs, like that of Stanford University, shut down completely. With much of the era of descriptive malacology past us, the problems attacked by malacologists, and the tools that they use, are more complex. Finally, it has been several years since a major compilation has appeared that poses problems to challenge scholarly amateurs.

Fostering amateur involvement does pay off. It generates collections that may eventually devolve to institutions. With professional interest, the scientific value of these collections can be maximized. Involved amateurs can provide needed financial support for institutions. Amateurs often provide volunteer assistance to museums, almost essential in keeping them going in these days of severely limited budgets. Properly directed, there are volunteer roles for a wide array of persons, from high school students to seasoned, scholarly amateurs. Amateurs, their organizations, and museum volunteers are also important in generating public and political support for institutions. Amateurs are important in helping to disseminate accurate knowledge to the public, and they can provide useful ideas for and assistance in research.

It takes an investment in time, as well as in learning the skills required to adequately manage volunteers and to work with amateurs. The following are a few ideas I have collected from various sources:

**Herbert N. Lowe****Fred Baker****Stillman Berry**

1) Professionals can go out of their way to address public forums, including shell clubs. Their message should be pitched not only to entertain but also to convey the excitement and scientific challenge of the field. Each presentation should include an effort to recruit assistance for their institutions. Learning how to do this well takes some effort. The fascinated high school student of today is tomorrow's professional.

2) Curators should define a variety of jobs that can be handled by volunteers with different levels of experience and skill. Volunteers cannot be considered slave labor. They seek acceptance, gratitude, companionship, and an opportunity to learn. Writing "volunteer descriptions" is a useful and educational experience. Time and patience are also needed to train amateurs in curatorial and research methods. A system of museum titles and non-monetary rewards is essential in building skills and maintaining interest.

3) In everything that professionals and professional-level amateurs write, an effort should be made to explain the basic ideas in a way that nearly everyone can understand, and important unresolved problems should be posed in a manner that challenges the reader.

4) Although large compilations and handbooks for the public take a considerable effort and may be dissatisfying for perfectionists who want all unsolved problems cleared up first, it is important to generate such works from time to time. They handle many questions,

promote public knowledge, provide a way to pose interesting problems for others to work on, and recruit public support.

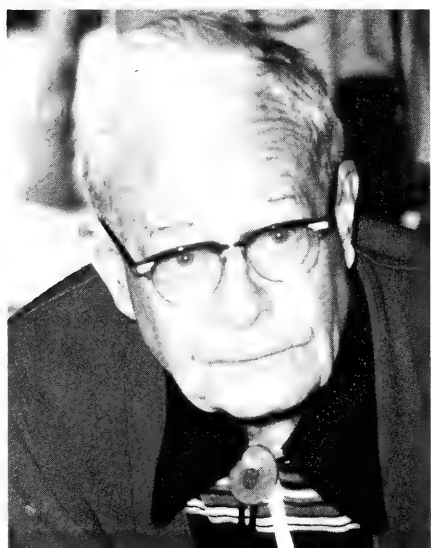
5) Professionals should be willing to help amateurs with their publications to ensure their accuracy and to promote their utility. Amateurs and their organizations need to be willing to have such review. Getting a manuscript reviewed for the first time can be a traumatic experience, but the benefits of the exercise eventually become clear.

6) Many professionals reside in a fairly closely defined environment and have never had an opportunity to learn skills in dealing with the public, amateur organizations, and volunteers. These skills can be learned, and it is never too late.

Only by making a conscious effort at the institutional level — in public and private museums, and at universities — can the involvement of amateurs in malacology be optimized. It is worth the effort, for history shows us that it can pay off. The word "amateur" comes from the Latin word "amator," a lover. Who could have a better reason for engaging in malacology.

ACKNOWLEDGMENTS

I appreciate the help of Donald R. Shasky for providing many of the pictures and David K. Mulliner for preparing black and white prints of most of the photographs.



Allyn Smith



Wendell Gregg



Robert Talmadge



Emery Chace



Elsie Chace



A.M. Strong

WANDERINGS OF AN ITINERANT MALACOLOGIST XI

Overview of My Past Two Years

by Donald R. Shasky, M.D.

The letter dated March 4, 1993, from our editor, Lynn Scheu, started out thus, "Dear Globe Diver Don Shasky," and the second paragraph started off: "Last time I heard from you, you wanted to take a one-issue vacation from your post as Itinerant Malacologist. That was a while ago. Are you traveling now?"

I have been itinerating so much and so often since my last "Wanderings" was published (June 1991) that I have not thought much about writing about the places I've been (except for several short papers for *The Festivus*, the San Diego Shell Club's monthly publication).

To illustrate, since the last "Wanderings" was written, I have been to the eastern Marshall Islands twice; Cocos Island, Costa Rica twice (my 10th and 11th times); Phuket and Phi Phi Don Islands, Thailand; North Queensland, Australia; Sarawak and Sabah, Malaysia; Tahiti and Huahine, French Polynesia; and France. These were all separate trips. Before this is printed, I will have itinerated to Coiba Island, Panama with COA members Kirstie Kaiser, Hank Chaney, et.al., and in July I will be diving with COA member Pat Lilloux both before and after his wedding on July 20 in Tahiti.

The trip to Australia included collecting out of Cairns in North Queensland and a renewing of my friendship with Barbara Collins, the secretary of the Cairns Shell Club for many years. This was followed by a two-day trip to Ayers Rock, and a few days in Sydney, where I had a chance to visit the Australian Museum and Dr. Winston Ponder and Ian Loch. I will have more to say about Australia in one of my upcoming "Wanderings."

In February of this year, I entered two exhibits in the Sarasota, Florida, Shell Show. This was the first time that I had ever attended a shell show, let alone exhibited in one. I had two exhibits and, fortunately for me, the judges, Drs. Tucker Abbott and Bill Lyons, liked what they saw. I won a plaque and a blue ribbon for the best small scientific exhibit, on shells of Cocos Island, Costa Rica, and an honorable mention for an exhibit titled, "An Introduction to Shaking."

My next "Wandering" will be titled, "Shells, Turtles, and Orangutans of Eastern Malaysia."

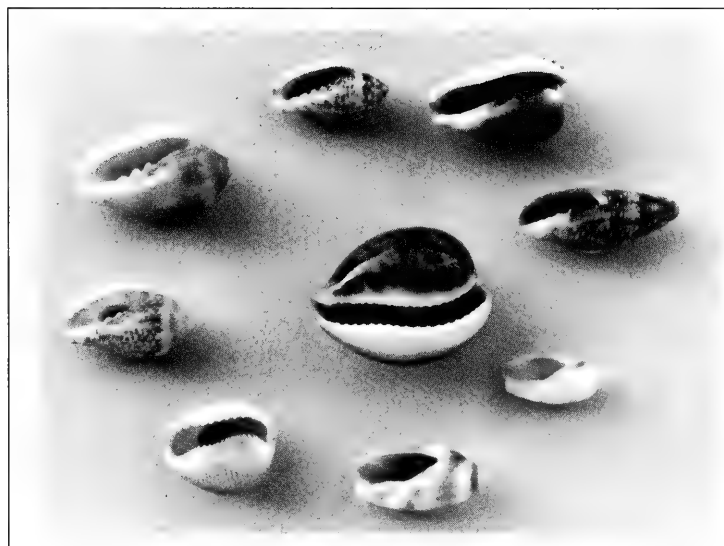
834 West Highland Avenue, Redlands, CA 92373



1993 SUMMER & FALL SHELL SHOWS AND MEETINGS

by Donald H.Y. Dan

- | | |
|---------------------|--|
| Jun. 27 -
Jul. 1 | Western Society of Malacologists Annual Meeting ,
San Diego, CA
Douglas Eernisse, Museum of Zoology, Dept. of Biology
University of Michigan,
Ann Arbor, MI, 48109 (313) 747-2193 |
| Jul. 12-16 | Conchologists of America Convention , Panama City, FL.
Linda and Jim Brunner, P.O. Box 8188
Southport, FL (904) 265-5557 |
| Jul. 17-18 | Keppel Bay Shell Show , Yeppoon, Queensland, Australia
Jean M. Offord, 277 McDougall St.
N. Rockhampton, Q'ld. 4701, Australia (79) 383-509 |
| Jul. 24 -
Aug. 1 | Oregon Shell Show , Portland, OR.
Maxine Hale, Show Chairman
347 N.E. 136 Ave. Portland, OR 97203 .. (503) 253-5379 |
| Jul 31 -
Aug. 1 | Townsville Shell Show , Townsville, Queensland, Australia
Von Vandenburg, 12 Lillipilli St.
Vincent 4814, Townsville, Q'ld. Australia .. (77) 75-6275 |
| Aug. 14-15 | Pacific International Shell Show
Cairns, Queensland, Australia
Barbara Collins, House of Ten Thousand Shells
32-34 Abbott Street
Cairns 4870, Q'ld, Australia (70) 51-3638 |
| Aug. 19-21 | Jersey Cape Shell Show , Stone Harbor, NJ
Jersey Cape Shell Club, P.O. Box 124
Stone Harbor, NJ 08247 (609) 653-8017 |
| Sept. 18-19 | Central Florida Shell Show , Orlando, FL
Larry Stiles, 1505 N. Carolwood Blvd.
Fern Park, FL 32703 (407) 834-2176 |
| Sept. 18-19 | International Shells & Fossil Bourse , Ottmarsheim, France
Michel Rioual, 2 Rue des Vergers
68490 Ottmarsheim, France 89-26-16-43 |
| Oct. 8-10 | Annual German Shell Fair , Berlin, Germany
Klaus Passan, Ostseestr. 41
0-1055 Berlin, Germany (40) 294-669 |
| Oct. 30 | British Shell Collectors' Club Shell Show
London, England
Kevin Brown, 12 Grainger Road
Isleworth, Middlesex TW7 6PQ, England . (81) 568-8333 |
| Nov. 6-7 | Philadelphia Shell Show , Philadelphia, PA
Al Schilling, 419 Linden Ave.,
Glenside, PA 19038(215) .. 886-5807 or 1-800-274-8530 |



THE JEFFREYS BAY PHENOMENON:

Sinistral shells of all species are found in greater numbers in this part of the South Coast of South Africa than anywhere else in the world. All shells pictured arrived in one single batch of shells. They are, clockwise from one o'clock: 2 *Ancilla albozonata*, *Trivia phalacra*, *Marginella piperata lutea*, *Marginella bairstowi* (most probably the only one in existence), *Marginella piperata*, *Cypraea edentula* and *Mitra latruncularia*. To prove that the photo has not been reversed, I have placed an ultra-rare live-taken dextral *Cypraea verhoefi* in the center, of which, so far, no sinistral specimen has even been found.

(photo from Werner Massier)

STU LILICO — HSN EDITOR “PRO-TEM”

by Olive Schoenberg-Dole

*Stu Lillico, former chief of **Hawaiian Shell News**, has, at age 82, again put on his editor's visor in service of that most famous of all shell periodicals. So pervasive has been his influence on the shell-collecting world that it seems important for us to know more about this ever-vital “man of the world,” so we've asked his long-time friend, Olive Schoenberg-Dole, to introduce us to the man behind the scenes of **HSN**.*



Stu Lillico

They popped out of the wet sand as he and his wife strolled along the people-less beach in Zanzibar, fifty-odd years ago. They stopped to see what the strange creatures were. Shells! Shells alive! And so it all began—Stu Lillico's love of shells.

Born in Seattle, Washington, Stu could be called a man of the world. Early on he lived in China where he was a newspaper man, editor, and foreign correspondent during the 30's. He met his wife, Helen Inglehart, in Japan and they were married in Shanghai. He spent two years in Zanzibar when

he was with the U.S. State Department. Some of the countries he's been to are South Africa, India, Singapore, China, Japan, Australia, as well as many European countries, and islands of the Pacific. Lucky for us, he chose to retire in Hawaii.

Did I say “retire”? Anything but. First thing he did was join Hawaiian Malacological Society, and gave us a slide show on Zanzibar. Next he took up scuba diving and joined a dive club. Then he became a member of the Adventurers Club, the Keppel Bay Shell Club, National Capital Shell Club, and Conchologists of America.

Shortly after arriving in Hawaii in 1970, he volunteered his editorial expertise to **Hawaiian Shell News**, working with Ellis Cross and Ruth Fair. He inherited the editorship from Ruth early in the '70's. Around 1986 he decided he needed a “breather.” Dr. Tom Burch took over as editor. When Tom wanted to quit and H.M.S. couldn't find another person for the job, Stu came back to the rescue. He now calls himself “Editor Pro Tem” — waiting for someone to come along.

Not only has Stu been **HSN** editor for 15 years, he's managed a shell show, been president twice, been vice-president, and a perpetual member of the board of directors. But no matter how involved, he has always found time to go shelling, whether locally or to far-away places: Vanua Levu, Ovalau, Taveuni, Malololaelae in Fiji, Tonga, Christmas Island (Kirimati), Phuket in Thailand, and countless “secret” places in Hawaii.

When traveling, Stu is contented in less than 5-star abodes. On a side trip to Nukualofa in '76, Stu and Helen arrived in that little South Sea town in the midst of a royal wedding celebration, and there were no accommodations at the two small hotels. So they spent the night in a room above a hot dog stand.

In Thailand, he slept in a tent on a beach frequented by pirates and occasionally by topless French tourists. On Kirimati he had a roommate who liked cool, fresh air and kept the front and back doors to their room wide open. I was next door where I had some shells that had died in my little photographing aquarium which I'd not cleaned up immediately. All the island's flies loved it, and in their excitement whizzed in and out Stu's room the whole time we were there. Bother him? He just went on with his vacation.



Stu Lillico
prowling a reef
in Hawaii.



Stu and Helen
putting the *Shell
News* together in
the H.M.S. office.

Making the most of his shell vacations, he often “visited” well-known posh hotels, preferably at cocktail time when he could relax after a day of shelling or sightseeing. The fabled Oriental in Bangkok, which was a short walk from the less-than-famous little hotel where we stayed, was particularly irresistible. Another hotel Stu “visited” was the famous Raffles of Singapore, noted for its Singapore gin slings and buffet dinners. But in Hawaii he joined shellers diving and dredging and sleeping among wet gear on a fishing boat while plowing through rough Hawaiian seas.

You'd think he was a super shell collector. Not so! True, he did pick up some goodies once in a while, but he wouldn't pursue them as some shellers do. He likes a shell because it reminds him of some place or event in his interesting life. Today, most of his collection has been sold, except for a few charismatic specimens. His favorites are marginellas and *Cypraea*, and maybe a few terebras. He loves the hunt the best. Waiting for a change in tide on a virgin beach or sandbar, Stu is in Shell Heaven when olives or other sand dwellers pop out of the sand and head for the water.

Always ready to help and always ready to do things, he lives his life to the fullest. Just recently he mastered the intricacies of a word-processor-computer to facilitate his time-consuming but interesting job of editing **HSN** once again. He sometimes has so many projects stacked up that he loses track of them. He is a social person and loves seeing old friends and meeting new ones, and can always find time to visit with people.

Yes, we're glad Stu chose to live in Hawaii!

*Collector, so merry,
Your tastes how they vary —
How your collection does grow!
With cockle shells and appalling smells
And pretty cones all in a heap!*

Whoa! Isn't that supposed to be "ROW"? No, not if you're like most of us, they're not. You have cones tumbling out of the closet and *Strombus* sliding off shelves, boxes of big busynons under the desk where your feet belong. Chances are, you're not even *THAT* organized. And chances are even better that the shells from that 1990 collecting trip to the Isle of Comensee are still residing in stinky zip locks and vaporous vials, awaiting space for storage as much as time for preparation. If only "Closet Organizers" would hit the shell collecting market!

But in the interim, collectors have to come up with their own solutions to the storage and organization problems that torment us all, endangering our marriages and possibly our lives. Here are two articles by resourceful fellow collectors who have resolved some of their dilemmas to their own satisfactions. Can some of their clever and inventive solutions help you?

HOW DO YOU KEEP YOUR COLLECTION? — Take a Look at Mine

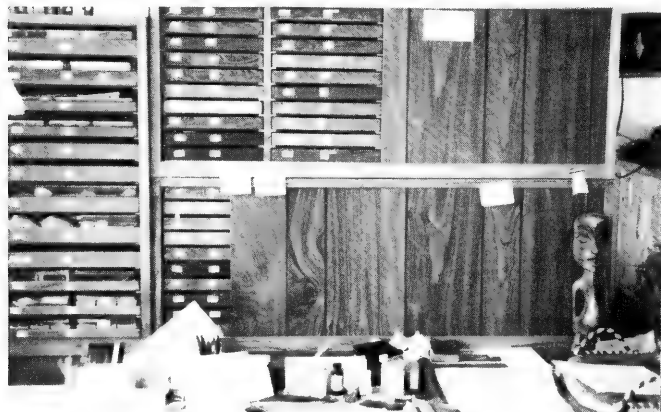
by Bob Purtymun

In 1973 I received a catalog from Althor Products Co. They manufacture plastic products: bags, boxes, vials, etc. The little boxes, $\frac{7}{8}$ " x $\frac{7}{8}$ " x $\frac{3}{4}$ " deep, were then less than ten cents when I ordered them in lots of 100 or more. My thoughts were, "If a shell is worth keeping, shouldn't it have its own little box or bag?" They offered two other sizes that would nest together, a $\frac{7}{8}$ " x $1\frac{3}{4}$ " and a $1\frac{3}{4}$ " x $1\frac{3}{4}$ ", both $\frac{3}{4}$ " deep, and also a light-weight plastic box with a lid that would hold and display 50 of those little $\frac{7}{8}$ " boxes or a combination of the three sizes. I placed an order!

That worked fine for a while, but as I started to catalog my collection, I realized that the little display boxes were not going to be adequate for all of my small shells. My next step was to build a wooden cabinet that I could place on the back of my desk. Forty-eight inches wide by 18" high and $11\frac{1}{2}$ " deep, it holds 40 trays, each tray capable of holding 100 of those little $\frac{7}{8}$ " boxes or a combination of the three sizes. To top everything, I put sliding doors on the cabinet so that it would be 99% dustproof. At the time I thought that I would never again have to worry about a place for the little ones, because this cabinet would hold 3,000 to 4,000 lots of small shells. I assigned each box a number and, because the small boxes often wouldn't hold a data slip, I entered the data on a 3x5 card for my files.

Larger cabinets followed, designed to hold an assortment of other box sizes for larger shells. The first was 32" wide, 34" high, and 14" deep with 24 trays $2\frac{3}{4}$ " to $3\frac{3}{4}$ " deep. Then came a 32" wide cabinet, 32" high, and 16" deep, with 20 trays of various depths (In the photo of my desk, half of this cabinet is visible on the left). Finally, to accommodate still larger shells, I built a cabinet 48" x 48" x 24" deep.

1200 Brickyard Way #407, Point Richmond, CA 94801



The view from my desk: The prototype cabinet, with its successor above, and part of another storage cabinet for larger boxed shells to the left.

In late 1970, when we moved from Hawaii to Pleasanton, California, one of the bedrooms in our new home had a built-in dressing table. When we remodeled the bedroom, I salvaged the dressing table for my computer desk, and eventually, an added bonus, for a shell cabinet. The drawers on the left hold plastic bags standing on edge in an egg-crated interior. The egg-crate is constructed of thin plywood dividing the drawers into 12, 15, or 18" compartments. Each bag has a data slip stapled inside. I keep the computer keyboard atop the open center drawer. The interior of the drawer beneath the keyboard is protected by a piece of plywood, and stores 500 lots in 2" x 4" plastic bags standing on edge in egg-crate compartments. On the right are 12 drawers, 12" x 20"; the first five hold terebras in plastic boxes and vials. The open drawer at the bottom holds larger cones, nestled in plush carpet to keep them from rolling around. The data slips can, in most cases, be kept with the shell, and it has proved a very effective method for storing and protecting cones.

My plan for the smaller shells didn't prove as lasting a solution as I had originally planned: by the mid 1980's I had filled the first cabinet. So I built a second identical cabinet and placed it on top of the first, on the front of my desk. It is already three quarters full.

My final cabinet is a 15 drawer cabinet. Each drawer is designed to hold 250 lots in 3" x 4" plastic bags or 150 lots in 3" x 5" ziplock bags in an egg-crated interior.

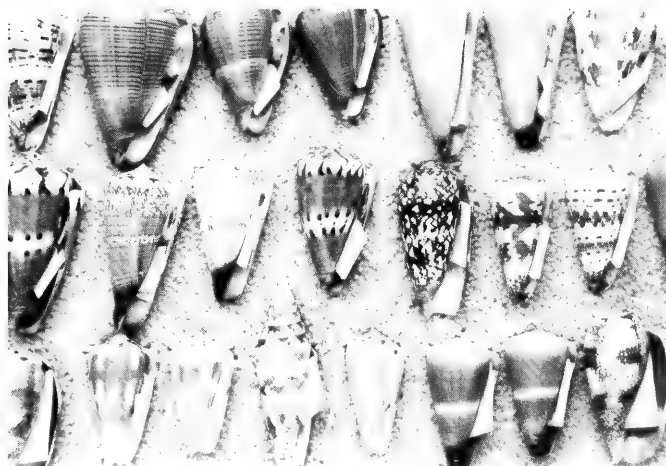
All this storage is not for a collection of exotic and rare shells; most of my shells are the type that would never appear on a dealer's list. Many are not identified, because I have been more concerned with collection data than I have been with names. There are a few rarities: *Cypraea rashleighana*, *C. tessellata*, *C. semiplota*, *Conus floccatus*,



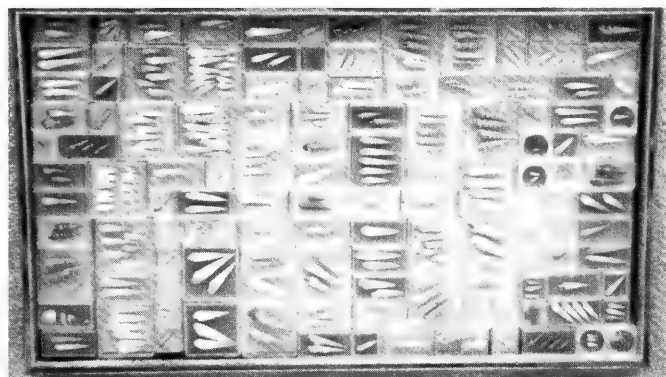
My computer desk with the keyboard atop the center drawer storage; a tray of cones on carpet is open at right.

Photos by Bob Purtymun

C. crocatus, a dead *C. adamsoni* and a few others. However, 95% of the shells are self-collected, and each shell evokes exciting memories for me. I still have thousands of lots in ziplock bags and egg cartons that have yet to find a place in a tray or drawer of my cabinets. They are cleaned and dated with a dive number that will lead me back to my dive log for locality and habitat information. I still have much work ahead. But then, that's part of the fun.



A close-up of the cones on carpet.



A tray of terebras stored in the three modular sizes of Althor boxes.



An "egg crate" storage drawer.



My card file cabinet — it also holds photos.

ORGANIZING A COLLECTION

by Kathi Krattli

How should I organize my shell collection? There are several possibilities. When I began collecting, as a child growing up in Hawaii, I just identified them by their common names, and much to my regret now, I didn't write down much data for them. And it being so long ago, I don't remember if I had them organized in any particular way.

I didn't really start collecting shells seriously until I joined the Greater St. Louis Shell Club in 1980. Except for a few shells that I had purchased or received as gifts over the years, my collection consisted mainly of shells that I or members of my family had found in Hawaii or Florida on family vacations. They all fit in a couple of small homemade shell cases in the living room and were grouped together by areas where they were found.

In 1986 I went on my first organized shelling trip to Western Australia, Bali, and Phuket Island. (I was hooked! Except for 1987, I've gone on one every summer since.) As my collection grew in size, I needed more places to store my shells. By this time, two of my sons had grown up and moved out, so now I had a "Shell Room." I purchased two metal 30-drawer filing cabinets, the ones designed to store legal-size paper, lying flat. These worked out really well. I used one cabinet for my self-collected shells, grouping them by area where they were found. The other one I used for all the other shells, grouping them by families.

A couple of years ago I was convinced that I should organize my self-collected shells by families also. In doing this, I really became aware of the differences that can exist within a species from locality to locality. But I still wanted somehow to be able to tell at a glance, without having to read the label, where the shells were found. Solution: line the bottom of the individual boxes with a different colored fabric for each area. I found that the polyester fleece fabric used for sweatshirts works well; it doesn't ravel and is thick enough to lie flat. A piece of thin foam towelling underneath the fabric makes it work even better.

I need to backtrack a bit. I got the idea for making the individual boxes for the shells from Dr. Emilio Garcia. You use the thinnest posterboard available. (Big office discount stores like Office Depot have the white in packs of ten.) The boxes are simple to make and you can make them exactly the size you need for each shell. I make most of them with 1 inch or 3/4 inch sides, depending on the size of the shell. This method makes for very neat-looking drawers.

After this past summer's trip to both Samoas, I noticed that my self-collected cabinet was full. Even with cardboard trays making a second layer in the drawers, I didn't have enough space to put away all of my newly collected shells. I now wanted something with wider drawers in which to store my larger families. Not being able to find anything suitable and not wanting to pay the cost of a custom-made cabinet, I decided to make my own. I took a good look at how our dresser drawers were put together and decided they didn't look too difficult. My sons cut the pieces for me on their table saws. It took awhile, but I finally got it all glued, screwed, and nailed together, and I was very pleased with the outcome. This cabinet is 48 inches high, 16 inches deep, 30 inches wide, and has 9 shallow drawers.

Now I want to put ALL my shells together by families. And it has finally dawned on me that I can keep my self-collected shells in white boxes and make black boxes for the others. This may seem like a lot of work, and it is, but to me it's enjoyable work and a good way to unwind after a stressful day at my job. And now I can have all my shells together, and still be able to tell instantly which ones are self-collected and from what areas they come.

312 Capri Drive, O'Fallon, MO 63366

* For a complete explanation of Emilio's box system, see "My Computer and I," by Emilio Garcia, *American Conchologist* Vol.20 No.2, p. 9.

HOW THEY LIVE WHERE THEY LIVE

by Peggy Williams

Mollusks come in an incredible variety of shapes, sizes, and colors — and this is mostly by design. Shell characteristics are often adaptations to the environment and the struggle to survive, for mollusks, as all animals, must 1) find food 2) protect themselves from predators 3) survive within the limits and perils of the environment 4) avoid competition for available food and living space. Each habitat supports a different group of mollusks that has evolved to deal especially with the possibilities and limitations of that singular niche. The adaptation of shell and habits to satisfy these needs among mollusks is fascinating.

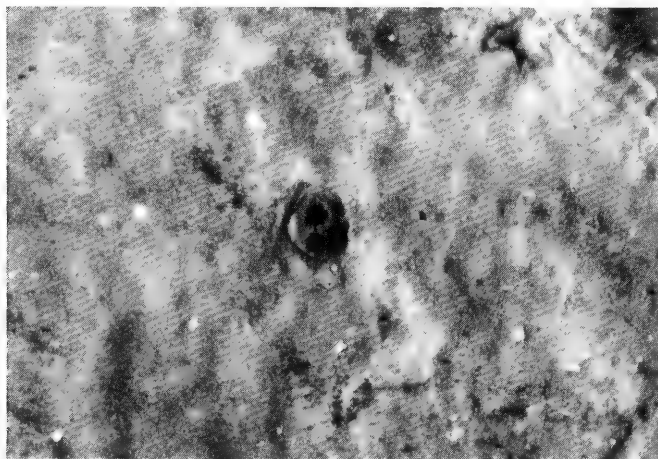
Geography of a West Florida Sand Bar

Here on Florida's West Coast, our lowest tides occur during the winter months when it's too cold to snorkel during the new or full moon. So, when we're seeking shells, we look for sand bars in the bays during the low tide. Indeed, we often find species gathering in the shallow water to lay their eggs during the winter months that would normally be scattered in deeper water.

Sand bar collecting is best done at the turn of the tide (when tide stops flowing out and starts flowing in); most sand-inhabiting species burrow during the time they know the sand will be exposed and they will be dry and cold. However, when they sense that the tide will soon come up again, they pop out of their sandy hiding places and begin to move. (The enigma is that the trails they make indicate that they usually head toward shore, not towards the incoming water!) It's best to get to the farthest reaches of the sand bar just before the tide will be lowest and then begin to walk back, slowly, towards shore as the tide comes up. You can also explore the wetter areas that won't get quite dry on the way.

As you move toward the end of the bar in the ankle deep water, look for anomalous sand areas. By this, I mean that if the sand is generally light-colored, there might be a slightly darker patch, indicating a previously disturbed surface. (The sand below the surface is usually darker. Digging or burrowing shells throw dark sand up to the surface.) Dig there. You might find a whelk (*Busycon contrarium* or *B. spiratum pyruloides*), a Crown Conch (*Melongena corona*), or possibly a Florida Horse Conch (*Pleuroploca gigantea*). You might spot the end of the siphonal canal just at the sand's surface, but even that is often buried. At tide turn, these animals will erupt from the sand and prowl for food. Then their nest will be a dark-colored hole. In turtle grass, the anomalous patches are more likely to contain Tulip Shells (*Fasciolaria tulipa* and *F. lilium hunteria*).

P.O. Box 575, Tellevast FL 34270



Angel Wing holes are straight, smooth and round, with the characteristic double siphon sometimes showing.

As you walk, keep looking at the bars and surrounding shallow water. Very large Left-Handed Whelks and Horse Conchs sitting on top of the sand are sometimes visible for a long way. If they are laying eggs, leave them alone or take only their pictures.

Also on your way, pick up any dead clams or pen shells, pieces of rock, oysters, cans, or other hard objects you find. Don't rinse them at first. Pick them up carefully and, before turning them over, look on the upper side, then the lower side. Then rinse. Then look again on all sides. There are any number of mollusks (and crabs — watch out!) that take advantage of hard surfaces to cling to during the dangerous time of low tide. Here they find shelter from desiccation and predatory birds, and a holdfast against rapidly flowing water. Later, when the tide is higher, some will venture out for food while others may find their dinner on that very clam or pen shell. All of these shells will be small — under an inch — and many, tiny. They include *Cantharus* species (*C. tinctus*, *C. cancellarius*), and *Pseudoneptunea multangulus*, muricids (*Urosalpinx perrugata*, *Favartia cellulosa*, *Eupleura sulcidentata*, *Calotrophon ostrearum*), *Nassarius*, marginellas (*Dentimargo eburneola*, *D. aureocincta*, *Prunum apicinum*, *Volvarina succinea*), dove shells, and occasionally *Seila adamsi*, a beautiful dark brown shell with exquisite sculpture.

If you possess a hand dredge (made of window screen on a frame), pull it through the grass or across the surface of the sand, digging in a half inch or so as you go. Swish out the sand and look in the bag for results. In the grass you may find modulus, dove shells, turrids, ceriths, and tiny *Gibberula hadria* (the "Snowflake Margi-



Giant Florida Horse Conchs visit the sand bars during winter months for meals and to lay eggs.

A piece of fish or dead shell attracts a lot of marginellas, nassas, and hermit crabs.



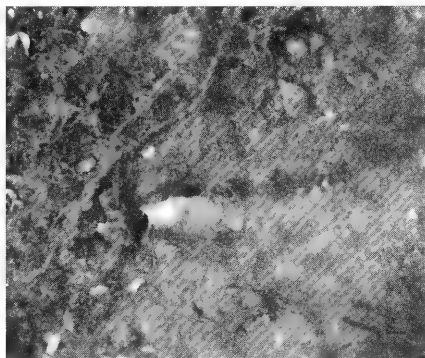
nella" once called *Marginella lavalleana*). In sand there will be even more variety: melanellas, turbonillas, marginellas, terebras, "bubbles" (*Acteocina* spp.), turrids and some tiny bivalves such as tellins and the Brown Gem Clam, *Parastarte triquetra*.

Now you've reached the end of the shallow water and, as you turn back toward shore, the tide is slack. This is the time to cover the dry part of the sand bar. If you walked on it on the way out, you found it perfectly smooth and shell-less, but now there are bumps in the sand and the beginnings of trails where the mollusks have begun to drag their shells as they move. It sometimes seems as though they are happy to feel the tide return and start to run with the anticipation of good times ahead.

The sand bar has a deep-water (leading) edge and a shore, or shallow-water edge. Each will yield different species of mollusks, so you must cross from side to side as you walk in order to cover all eventualities. On the shallow side you may find turrids (*Cryptoturris cerinella*) and moon snails. The latter (*Natica*) seem to be confused about where they want to go and wander all over the place. The trails are convoluted and cross themselves repeatedly. At the end (usually toward shore as I mentioned) you will find a bump where the shell is barely under the surface. These trails, however, are similar to trails left by Horseshoe Crabs, and the bump might be sharp-tailed and wiggly!

On the leading edge of the bar you will find terebras and cones. We have several *Terebra* species, and often there will be two or three in the same area. These are *T. dislocata*, *T. protexta* and *T. vinosa*. Just as the tide turns, they will "pop" out of the sand, then rest there for a few minutes before beginning to plow a straight trail towards shore. At first "pop," the sand looks like it has a triangular tear in it. *Conus stearnsi* also pops in this manner,

Whelks (*Busycon* spp.) can bury completely or may show only the tip of the siphonal canal from under slightly disturbed sand.



Don't stop at the shoreline; the highest wash of seaweed, if moist and more or less permanent, may contain quarter-inch-long *Truncatella* species.

and I haven't yet figured out a visual difference between these species when they have just popped. Sometimes a larger pop will be *Conus floridanus*. Terebras are often found in an area where the bar suddenly drops from several inches high to the water.

Also on the leading edge, and sometimes just in the water, you might find Angel Wing holes. These are found inside the bar also, when there's a shallow water flow between the bar and the shore. It's surprising how often Angel Wings are found in the muckiest, dirtiest, yuckiest places, including sewer outfalls. Now, not every hole will have an Angel Wing. When you find a hole, put your finger in it — there's nothing that will snap it off! If the hole is straight, deep, and smooth-sided, chances are it's an angel wing (though in very clean white sand it could be a Mantis Shrimp). You might feel the siphon withdraw from your touch and go deeper into the hole. If you do, you've got an Angel Wing. If there's a little water over the hole when you find it, you might even see the double siphons at the sand surface. Start digging away the sand, always keeping track of the hole, until you feel the top edge of the shell. Keep digging around and under the shell until you can cup it in your hand and lift it out of the hole. Contrary to popular belief, the mollusk cannot dig deeper quickly, but will stay in place until you reach it, if you don't lose the hole!

Everywhere on the sand bar and in the grass you'll find *Nassarius vibex*. The Basket Shell is the ubiquitous scavenger of the sand bar. When it pops it looks like a small cone and when it trails it looks like any other shell. It is one of the first to begin moving at tide turn and the most common shell on the sand bar. Look in the picture of Horse Conchs for several dozen of them.

On top of the sand bar, at the driest part, olive shells plow a deep furrow across the sand. They don't go arrow-straight but wander a little — though not as much as moon snails — and the furrow usually has an open top with high sand sides. The bump at the end is unmistakable. Their smaller cousins, the olivellas, however, leave more confused trails that are often discontinuous, and the shell may not be easily found. The hand dredge may be good for picking these up.

Sometimes on the dry sand you'll see a wide trail, like a bulldozer track, with a shallow round lump at its end. This could be a sand dollar, or it could be a Baby's Ear, *Sinum perspectivum*. Sand dollar lumps often have the five holes showing as holes in the sand. The Baby's Ear animal is too large for the shell, is slimy — to ease its passage through the sand — and looks like a slab of pork fat. Yuck! It, along with olives and moon snails, will slime your bucket, so put them in their own container, if possible.

If you are lucky and in the right area — clean, well-washed sand, usually near a pass — you might find epitoniums in the dry sand area. When the tide finally covers this sand, they crawl all over it. But they are perfectly colored to be camouflaged in the white sand.

Of course, all these animals are looking for food in the sand, and food there is. Including bivalves. Many tellins, surf clams, and venus clams are to be found on the sand bar. Largest are the edible clams, Sunray Venus and Quahogs. (Remember to look in the dead ones for other shells.) Buried at low tide on the high sand, and popping at tide's turn, are the cockles, *Trachycardium egmontianum* and sometimes *Dinocardium robustum obliquum*.

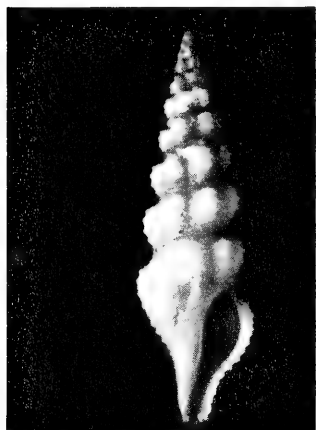
Now you're nearing the shoreline. If there is an oyster bar, pick up a few oyster bunches in your gloved hand. Look carefully — there may be parasites, such as *Odostomia* species, about 1/4 inch in length, drills (*Urosalpinx perrugata* or *U. tampaensis*), tiny dove shells like *Parvanachis obesa* and *P. ostreicola*, or even *Epitonium*. Look for trails of turrids and ceriths in the highest wet beach. Finally, in the mangroves or salt marsh grass above the water, look for *Littorina* (*L. angulifera* on mangroves and *L. irrorata* in the grass) and truncatellas in the seaweed at the highest beach wash.

I haven't even mentioned many of the species to be found in one to two feet of water at low tide, including *Vermicularia* (Worm Shells), *Papyridea*, *Carditamera*, *Pitar* and *Ensis* species and many other bivalves. You can see that sand bars in West Florida bays are rich in molluscan life.

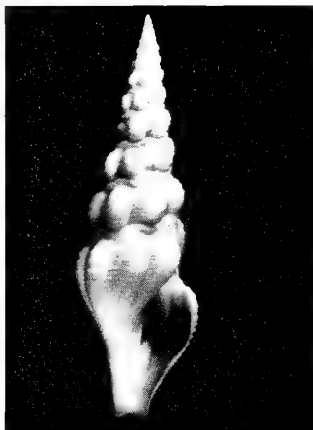
ATLANTIC AND CARIBBEAN TURRIDAE

by Kevan and Linda Sunderland

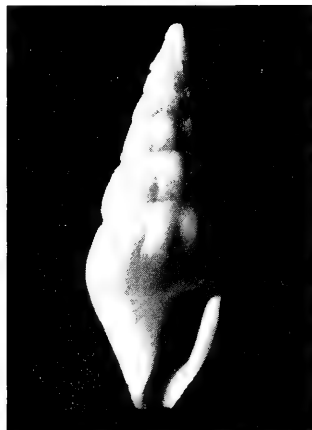
P.O. Box 130243, Sunrise, FL 33313



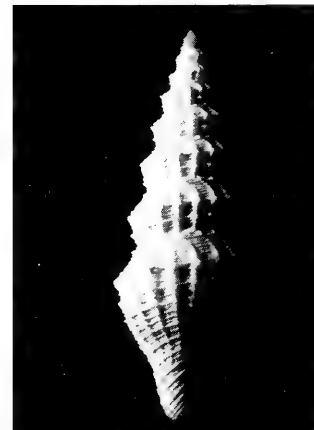
Compsodrillia eucosmia (Dall, 1889). 24mm. 480' off Key West, FL.



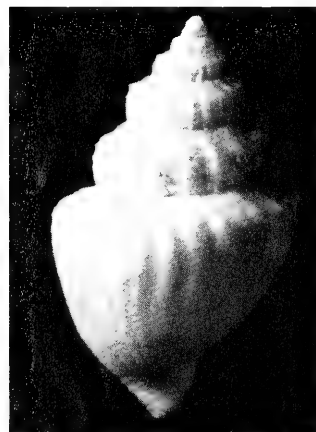
Stenodrillia horrenda (Watson, 1886). 62mm. 1300' off Key West, FL.



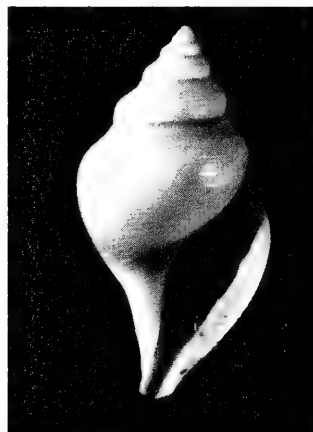
Drillia albicoma Dall, 1898. 18mm. 190' off Hypoluxo, FL.



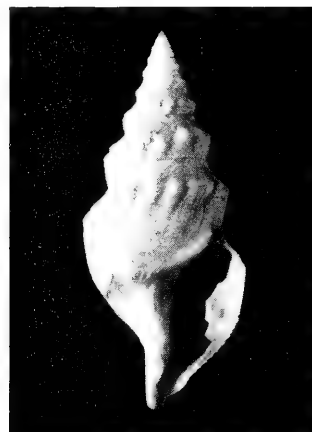
Mangelia antonia (Dall, 1881). 15mm. 2310-3300'. 200 mi. off Cape Fear River, NC.



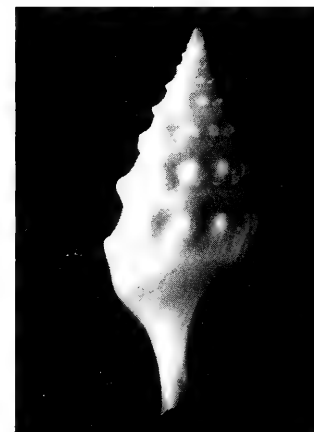
Pleurotomella blakeana (Dall, 1889). 12mm. 2640', 120 mi. s. of Cape Lookout, NC.



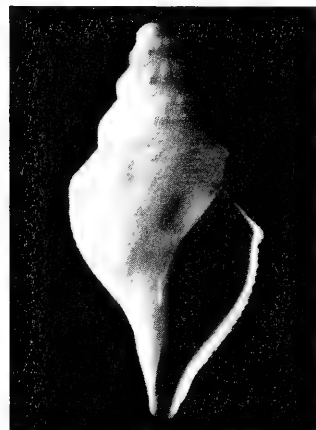
Pleurotomella bruneri Verrill & Smith, 1884. 20mm. 11,154' off Delaware Bay.



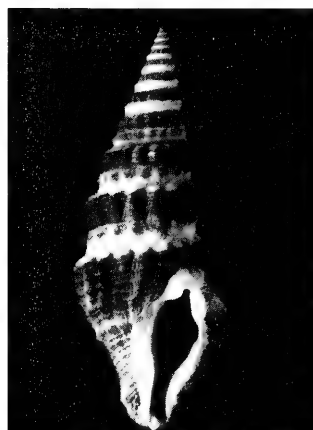
Pleurotomella costlowi Petuch, 1974. 28mm. 2310-3300', 200 mi. off Cape Fear River, NC.



Pleurotomella dalli Verrill & Smith, 1882. 27mm. 2310-3300', 200 mi. off Cape Fear Riv., NC.



Pleurotomella vayssierei (Dautzenberg, 1925). 53mm. 2,640', 120 mi. s. of Cape Lookout, NC.



Crassispira harfordiana (Reeve, 1843). 37mm. 5' in reef, Veradero, Cuba.



Polystira albida (Perry, 1811). 64mm. 150', off Key West, FL.



Polystira florencae Bartsch, 1934. 18mm. 3' in sand, South Bimini.

FOR FURTHER READING:

- Bartsch, P. 1934. Reports on the Collection obtained by the First Johnson-Smithsonian Deep-Sea Expedition to the Puerto Rico Deep: New Mollusks of the Family Turridae. *Smithsonian Miscellaneous Collection*. Vol.91, No.2.
 ———. 1943. A Review of Some West Atlantic Turritid Mollusks. *Memorias de la Sociedad Cubana de Historia Natural "Felipe Poey."* Vol. XVII, No. 2.

- Bouchet, P. & A. Waren, 1980. Revision of the North Atlantic Bathyal & Abyssal Turridae (Mollusca, Gastropoda).
 Dall, W.H. 1881. Report on the Mollusca, Part II. Gastropoda and Scaphopoda. Reports...on the Steamer BLAKE. *Bull. Mus. Comp. Zoo.* 18: 1-492.
 ———. 1890. Scientific Results of Explorations by the...Steamer ALBATROSS No. VII...1887-1888. *Proceedings of the U.S. National Museum*, Vol. VII No. 773.

The intent of these centerfolds is not necessarily to distinguish among valid and invalid species, but to provide illustrations of taxa not popularly available, for the information of the collector.

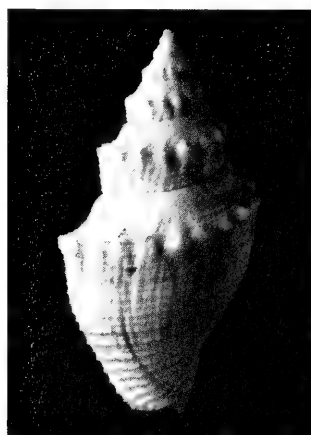
With grateful appreciation to Gary Rosenberg, Robert Robertson and David Robinson for all their assistance with literature and identification.



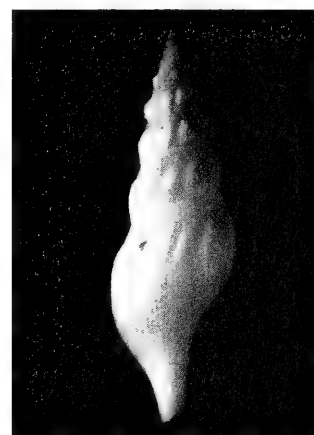
Cythara cymella Dall, 1889.
20mm. 578-743', w. coast
Barbados.



Pleurotomella agassizii Verrill
& Smith, 1880. 2,310-3,300', 200
mi. off Cape Fear River, NC.



Pleurotomella aguayoi
(Carcelles, 1953). 34mm. 240'
off S. Brazil.



Pleurotomella atypha Bush,
1893. 36mm. 2,310-3,300', 200
mi. off Cape Fear River, NC.



Pleurotomella emertoni Verrill
& Smith, 1884. 14mm. 10,878'
off New Jersey.



Pleurotomella hadria Dall, 1889.
28mm. 2,310-3,300', 200 mi. off
Cape Fear River, NC.



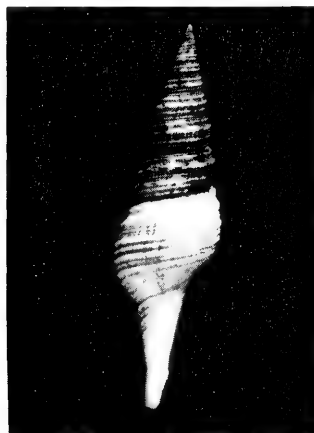
Pleurotomella leucomata (Dall,
1881). 19mm. 2,310-3,300', 200
mi. off Cape Fear River, NC.



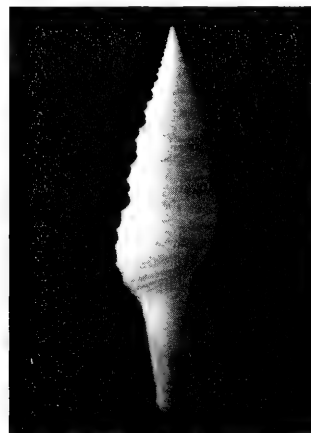
Pleurotomella packardii
(Verrill, 1872). 15mm. 11,154',
off Delaware Bay.



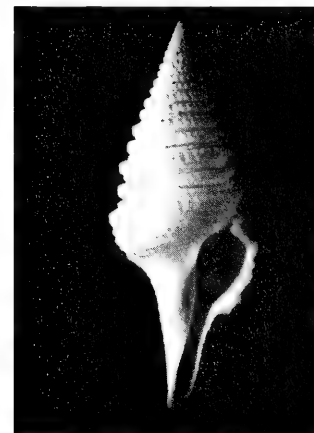
Polystira hilli Petuch, 1989. 51
mm. 660', Barbados.



Polystira tellea (Dall, 1889). 60
mm. 684', west of Tampa Bay,
FL.



Polystira vibex (Dall, 1889). 30
mm. 360', Florida Straits off
Conch Reef.



Gemmula periscelida (Dall,
1889). 38 mm. 540', off Naples,
FL.

Maes, Virginia Orr Maes. Unpublished notes. Academy of Natural Sciences, Philadelphia.
Sander, F. & C. Lalli, 1982. A Comparative Study of Mollusk Communities on the Shelf-
Slope Margin of Barbados, W.I. *Veliger*. Vol.24, No. 4.
Sunderland, K. 1991. Atlantic and Caribbean Turridae, Part I. *American Conchologist*
Vol. 19(1): 14-15.

Verrill, A.E., 1884. Second Catalog of Mollusca Recently Added to the Fauna of the New
England Coast and the Adjacent parts of the Atlantic, consisting mostly of Deep-
Sea Species, with Notes on others previously recorded. *Transactions of the*
Connecticut Academy, Vol. VI.

WHAT IS IT???

Matthew Grote of Deale, MD has a strange cone for our perusal, a real beauty, red-orange and peach on a white background. With it he sends some speculation on its identity.

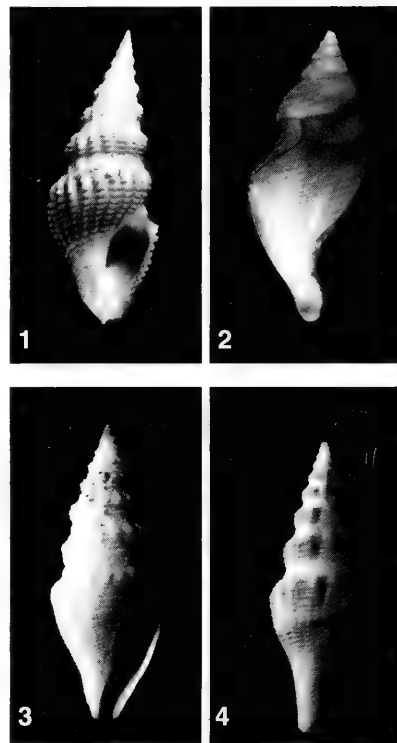
"After reading the "WHAT IS IT?" feature I was inspired to send in a photo of a shell in my collection. Its identification is not a great mystery, but rather a known quantity waiting to be pegged...David Hunt of Barbados collected and photographed it. This shell was fresh dead crabbed from a trap set at 480' off South Hometown, Barbados. It measures at 54.5mm, and is in almost miraculous condition. I feel this shell merits attention because of its striking beauty, which is rarely seen in cones from such depths.

"Understandably, a few names can be applied to this shell. David originally described the shell as a *Conus daucus* variant. He later felt it would be better placed with *C. amphurgus*. I feel the latter is the true ID but cannot rule out *C. riosi*. Other possibilities include *C. sanderi* and *C. boui*."



Kevan Sunderland has photographed four mystery turrids from his collection, shells he can't hang a name on, despite his recent study trip to the ANSP and the Smithsonian to investigate the group. (We're not at all surprised there are mysteries — what a vast and intimidating group the Turridae are!)

1. *Crassispira* species, 48mm, from off the Gulf of Venezuela at 250'.
2. *Pleurotomella* species, 54mm, from off Dauphin Island, Alabama at 3,060'.
3. *Pleurotomella* species, 17mm, from 200 miles off the Cape Fear River, North Carolina at 2,310-3,300'.
4. *Glyphostoma* species, 20mm, taken at 578-743' off the west coast of Barbados.



LUMPERS AND SPLITTERS

When Laurie Smith, a member of the Conchological Society of Southern Africa, Pretoria group, wrote a letter to the editor of their publication, *The Strandloper*, asking for a clarification of the generic names used in the family Cypraeidae (*Cypraea* vs. *Lyncina*, *Erosaria*, *Talparia*, and such), she got her answer from Dr. Richard Kilburn himself. Malacologist at the Natal Museum in Pietermaritzburg, noted researcher into the taxonomy of the marine mollusks of southern Africa, and senior author of *Seashells of Southern Africa*, as well as scientific consultant to *The Strandloper*, Dr. Kilburn responded in the December 1992 (No. 234) number of *The Strandloper*. We think our readers might like to read his reply:

In a nutshell, the confusion between the two systems of nomenclature reflects the ancient conflict between "splitters" and "lumpers"! To generalise, "splitters" are those who like to use genera that contain few species, whereas "lumpers" prefer a simpler classification of relatively large genera.

"Genus-splitting" has some practical value in large families where natural groupings have yet to be finalised and relationships are often hard to understand (e.g., Turridae, Pyramidellidae, Triphoridae). Conversely it is of little value in small, relatively uniform groups. Unfortunately, although classification should strive to reflect true relationships as they occur in nature, personal judgement and bias will always influence results. Thus lumpers are often established authorities who are reticent to change their long-entrenched opinions in the light of modern viewpoints. Splitters are often those with little understanding of taxonomic principles or even of mollusks as biological entities. The most notorious splitter of all was probably the Australian Tom Iredale, who frequently described new genera on the sole grounds that the

species in question was Australian, and could thus not possibly be related to species from elsewhere! However, some splitters have merely over-specialised; in other words, they have so immersed themselves in their chosen group of mollusks that insignificant differences between complexes of closely related species may be viewed as of major significance. Such were the Schilders, whose studies of the Cypraeidae, conducted a few decades ago, led them to divide up the single genus *Cypraea* into about 31 genera, each with only a handful of species, and mostly differing in minor shell characters.

Obviously, neither splitting nor lumping is likely to produce a scientifically balanced classification. The only objective test is whether proposed genera differ from one another in widely-divergent, sharply-defined and constant characters, preferably drawn from several different body systems (e.g., shell, radula, reproductive organs, etc). Modern systematic theory enables some evaluation of characters (i.e., it is now accepted that "primitive" characters are of no value in classification). Of course, small or cryptic shell-characters have sometimes been shown actually to be significant, in the light of subsequent anatomical research.

In the case of the Cypraeidae, it would seem that at last a scientific basis for a new classification is in the offing. Prof. Alison Kay of the University of Hawaii has been working on the living and fossil cowries for many years, and is now confident that a number of valid genera can be recognized for the family. However, until her results are published, it would be wise to use only the name *Cypraea*, in a broad sense.

—Richard Kilburn

BOOK REVIEW:

The genus Chicoreus and related genera (Gastropoda: Muricidae) in the Indo-West Pacific. Roland Houart. *Memoires du Museum National D'Histoire Naturelle.* 1992. 188 pp., 480 figs. (20 in color), 8 1/2" by 10 3/4", soft cover. \$75.00.

In 1988 Ponder and Vokes published *A Revision of the Indo-West Pacific Fossil and Recent Species of Murex s.s. and Haustellum*. In his monograph, Roland Houart, a long time researcher of the Muricidae, has added the latest investigations on the genus *Chicoreus* and its related genera *Chicomurex* and *Naquetia* in the Indo-West Pacific. The genus *Chicoreus* has been divided into 5 subgenera: *Chicoreus* (s.s.), 7 species; *Triplex*, 39 recent and 17 fossil species; *Siratus*, 2 species; *Rhizophorimurex*, 1 species; and *Chicopinnatus* (new subgenus), 7 species. *Naquetia* and *Chicomurex*, which were formerly treated as subgenera of *Chicoreus*, have been raised to the generic level because of differences in radular morphology. Five species have been assigned to *Naquetia*, and seven recent species and two fossil to *Chicomurex*. To facilitate identification, Mr. Houart has systematically revised and illustrated 80 living and fossil species. The living species, which are accompanied by distribution maps, have been redescribed to give the reader a more accurate understanding of each taxon and to clarify its differences with other closely related taxa.

Among the 480 figures in the book there are 85 of enlarged protoconchs, 6 of opercula, 38 of radulae, 5 of apertures, 8 of spine ornamentations, and 63 distribution maps. There are also four very useful tables that compare characteristics of problematic groups. Each valid name is followed by its synonym(s) and by "additional references" which list the publications, both scientific and popular, where the species appears, either by its valid name, or misidentified. All of these references are found in a very useful complete bibliographical form in the "References," at the end of the book.

Although the price is rather high, the amount and quality of research that appears in the book makes it very much worth it; and although there are only 4 color plates showing a total of 20 specimens, the diversity of variation within a species that the author shows us in black and white photographs is infinitely more important than color.

Anyone interested in the Muricidae will want to have this book in his/her library. If all molluscan publications were of this quality, I would not mind sending for them sight unseen. Now we will wait for the rest of the *Chicoreus*. It will be very interesting to see their treatment because, at least for some Caribbean species (not covered in this current treatment), they do not necessarily conform to the definition of some of the higher taxa established in this monograph.

—Emilio Garcia



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OUR COA CLUBS — A CLOSER LOOK

by Nancy Gilfillan

The Gulf Coast Shell Club, Inc.

It all began when Bob Granda, who lives in Panama City on the Panhandle of Florida, heard about a shell club in nearby Fort Walton Beach. He wanted to learn more about his hobby, and felt the need to talk to other "shellers." He decided to place an ad in the local paper asking anyone who would be interested in driving to Fort Walton Beach for meetings to contact him; the response was so overwhelming that it was decided to form a group right there in Panama City.

The first meeting was held in September, 1979 at the Frank Nelson, Jr. Clubhouse. There were about 15 people present. Today, the Gulf Coast Shell Club meets at the Junior Museum of Bay County Annex on the second Tuesday of each month, except for June (the club picnic) and December (the Christmas social) and presently boasts 96 members from 10 states.

The club's membership has many varied interests, ranging from collecting to diving to photography, and from art to shell crafts. They schedule monthly field trips to local shelling sites, including fossils. Several members take trips in and out of the United States and come back with programs (and tall tales!) of their experiences at these sites.

The club publishes a bimonthly newsletter called *Shell and Tell*. They also have a new pin with their logo, *Argopecten irradians concentricus* (Say, 1822), and the state of Florida. Superimposed on the state are places where club members lived at the time the design was approved. In addition, they have a club cap with the same design which they sell.

The club has an annual shell show and welcomes out-of-town exhibitors and guests. This year, of course, there will be no shell show because the Gulf Coast Shell Club will be hosting the COA Convention in Panama City. The club plans to resume its shell show in 1994.

To encourage its members to enter, the club has shell cases which it will loan for members' use when they exhibit in the shell show.

In 1981 the club published a booklet entitled *Seashells of Bay County and the Gulf Coast*. This booklet contains photographs of 96 popular species, their descriptions, a shelling map indicating where each can be found, and tips from local shellers. They also publish a biannual list of species found in the area. With each list come additions; the list currently totals 430 species.

Like most shell clubs, the Gulf Coast Shell Club does have fund raisers. The members hold an annual auction at the time of their June picnic. They also have an annual garage sale, and play a rousing game of Yankee Trader at their Christmas social. The club uses these funds for COA dues, for their meeting place rental, and for hosting their shell show.

The members contribute to local environmental causes. At this time they are working on a video for the Bay County School Media Center. The video will be available to all public school students so they may have a better understanding of shells and their habitats. Members give lectures and demonstrations as well to schools and local civic groups. They also have a slide program available to other clubs on *Shelling the Florida Panhandle*.

Dues are \$6.00 for singles and \$8.00 for families, with a one-time \$5.00 initiation fee. To become a member of the club and to receive its newsletter, please send dues to Reta Melvin, 661 Cypress Avenue, Panama City, Florida 32401. If you are in the area, I am sure they would be delighted to have you attend one of their meetings. In the meantime, try to attend the COA Convention; you will find your hosts will have done a wonderful job and will be anxious to make one and all feel most welcome.

SHELLING AND DIVING THE SOLOMON ISLANDS

by Derrick and Ann Crosby

By a stroke of good luck, Ann and I were able to visit the Solomon Islands for two weeks in August 1989, as part of a diving/shell collecting trip organized for shell collectors by Alan Hinton, author of several shell books. We spent four days in Honiara — the Islands group capital, on the island of Guadalcanal, and nine days on the island of Gizo in the Western Province.

In general, the shell collecting was full of surprises, with many expected species missing and some unexpected species found. We brought home a 20 liter bucket packed with shells for our collection. We collected over 350 species in our few days. It took me over a year to clean and prepare the shells collected, and my wife, just as long, to enter the catalogues, write labels, and enter the shells into our collection.

The diving was magnificent and generally well run, with warm, clear water — a photographer's paradise with myriad things aquatic to photograph. We did some current drift dives, night dives (the best), deepish dives (120'-130'), sheltered water dives and wreck dives. It was organized by Island Dive Services, based in Honiara with a shop in Gizo. At \$20 each, including tanks, air, weights, boats, boatmen and expert divemaster, the diving was the best value for the money I have ever had.

While diving was freely available at Honiara from quite professionally-run dive shops, we did not dive while in Honiara. Instead, we hired a minivan for two days, visited many beaches, and went snorkeling over the reefs. There are lots of nice coral reefs, and of course the coastline is littered with war relics — both above and below water. Hence the name "Iron Bottom Sound" — a paradise for wreck divers. But I should caution here that all wrecks are declared war graves, to be looked at but not touched — and Solomons customs are meticulous and thorough.

On our first day's motoring we traveled north from Honiara up the main coastal highway, stopping at several beaches along the roadside. Most of these were hard, weathered rubble-type beaches with some turnable rocks. We collected several trochid species, some really nice small drupas, highly coloured, and the odd cowries and cones — all fairly common, just a few specimens for locality records. We ultimately arrived at a place called Tambia Village, a small, low-key, tourist hotel near the beach. There was a large and interesting low tidal reef to explore, producing all manner of muricids, mitres, some bivalves, but few cowries and not many more cones. Once again, our bag was filled with fairly common species, just locality records for our collection.

29 Bush Road, Kamo, Whangarei, New Zealand



Typical transport around Gizo. About 20' long, it carries eight divers or about 12 people.

The next day we went south. However, the only accessible beaches were of coarse gritty sand, with virtually nothing washed up and nothing at the water's edge either. So we motored quickly up to just north of Honiara to revisit a couple beaches; we had a fossick in a couple of rivers, producing quite a bit of fresh water material.

Our third day we spent in and around Honiara, exploring shops, getting down to the beach where possible, visiting the local outdoor market (where we bought a near-gem *Cassia cornuta* of almost 300mm! Dirty and unprepared, it cleaned up nicely for about US \$10.00). We also visited a shell museum and shell dealer, Ann Kengalu, who had some very nice shells — *Conus gloriamaris*, *Cypraea aurantium*, and heaps of other nice specimen shells. It is worth one's time taking a look around Honiara, because several shops sell a few shells at reasonable prices, and one can also buy exquisite hand-carved woodwork — mostly fish and animals — very cheaply.

On day 4, we New Zealanders met the rest of the group, from Australia and U.K., and assembled for our flight to Gizo and the promised diving. The flight arrangements proved to be an utter shambles, but we all eventually arrived at Gizo, with bags to follow the next day.

The Typical Diving/Collecting Trip

We all had ten dives apiece. As shell collecting was the primary objective, most dives were to 50-60 feet, so that we could concentrate on studying coral growths and sandy areas for the many species of shells that live in the tropics. Molluscs are not entirely silly — they mostly hide during the day when snorkelers and divers are about, so one has to have a knowledge of habitat to know where to look for them — under boulders or coral growths or ledges, deep in the weed fronds, inside larger dead shells, or beneath the surface of the sand. Also, their shells are usually well camouflaged with weed and coralline growths, so they blend with the background and are hard to see, even when one is looking at them.

Shells were not that plentiful, and it took quite a lot of work to locate the many species that live in those reefs. The cone and cowrie collectors were a little disappointed by the species they expected to get, and didn't, but for all of us general collectors, it was just great. Before long, we had begun to collect significant quantities of different species — some nice coralliophilas, and in the sand slides, nice terebras, olives, strombs, and such.

The reefs are tremendous — miles and miles of active, living reef with every size, shape and colour of coral one can imagine, and generally no sign of pollution of any kind. Fish, large and small, of many species, and starfish abound, as do a wide variety of sea urchins, in a range of sizes, colours, shapes, and spine types. The photographers in the group were enraptured (no, not with nitrogen!); the Australians commented that it was at least as good as unspoiled parts of the Great Barrier Reef, and we found it on a par with the Vanuatu and the Loyalties.

A few hazards await the unwary. Some corals do not like being touched and impart a burning sensation to any skin that brushes them; it lasts ten or fifteen minutes and is rather unpleasant. Most corals are fairly harmless, but it pays to wear some protection from coral grazes, because these become infected very easily. We all know about venomous cone stings, but some cowries emit quantities of mucus which sticks to everything and is very difficult to wash off. Sea cucumbers emit sticky white rubbery strands (their internal organs!) which are also difficult to remove. And some sea urchins spines are quite sharp and likely to spear a careless diver; such wounds almost always turn septic, bad news in the tropics!

Visibility of 100 feet in the delightful warm water was quite common, and it was quite a sight to see six or seven divers, from a

distance, fossicking among the corals and fanning sand slides. So pleasant was it that it wasn't uncommon for us to finish a dive, then spend another hour or two just snorkeling over the reefs.

Deep Dives

We undertook three "deep" dives. As with all our dives, the maximum depth and time were specified beforehand, and were adhered to—it was a very long way to a recompression chamber! The first dive was a current drift dive along a reef face. Current was an estimated 2-3 knots. We descended the anchor rope to the anchor, set at 30', then followed the divemaster down the reef face to 120', the maximum specified depth. Then we just drifted along the reef face, sightseeing in luxury. Warm water, compensator trimmed just so, we saw a lot of reef in 10 minutes, as we drifted slowly upward to about 90', then on up to 20' for the rest of the dive in shallow water. It was a relief to see the dive boat drifting overhead, just as it should be. After a few more minutes, the reef dropoff fanned out and the current drifted away to quite calm water where we had a very pleasant extra few minutes shelling.

During this dive, someone enquired about sharks - "Not a problem," replied the divemaster, "you'll see some today." Having never seen sharks while diving, I thought, "This'll be interesting." About halfway through the dive I got a prod in the ribs. It was the dive master, who pointed to my other side where a pair of sharks just easily swam along — against the current — and disappeared into the distance. I guess it was a sort of anticlimax — I felt, "Well, so what?" and the dive continued as before. Divemaster later told me they were 6-8 feet long and commented that they were not hungry. They were the only sharks we saw on the whole trip.

The reef was an interesting one, with a sloping top to 30-40 feet, and then almost vertical down to a sandy bottom at 120-130'. My find of the trip was a freshly-dislodged-from-the-reef live 33mm *Conus bullatus*. The coral was just as colourful as elsewhere, but a good torch was essential to appreciating the full beauty of the reef at these depths.

The second deep dive was very much a non-event, a waste of time which should have been cancelled. It was to be the same sort of dive as the first, drifting with the current along a reef face to a large sand fan where we would search for sand dwellers. But we never got to the sand fan. Because of a miscalculation, the current was running the wrong way. The only progress we could make was upstream, hanging onto coral, boulders and anything else stationary to keep from being swept the wrong way. We were virtually out of air in 15 minutes. The divemaster described it as a good navy training dive, but not for recreational divers.



Hard corraline rubble beach north of Honiara — good collecting!



Gizo foreshore with hotel entrance at left. Yes, we were that close to the beach!

Deep Dive #3 was on the wreck of the 420' Japanese freighter/troop ship "TOA MARU," sunk by a torpedo in World War II. She was fully laden with mixed freight for the Japanese war effort in the Solomon Islands. Along with troops, she carried trucks, oil, petrol and bags of cement. The torpedo struck her just forward of midships, missing the engine room, but penetrating the hold just forward of the engine room. She was machine-gunned, caught fire, and burned fiercely. She was beached, but slid back to rest with her bow in about 15' and her stern in 120', resting on her port side. The scrap metal merchants had been there and propellers and the like had been removed.

Our dive boat tied up to a permanent mooring buoy. We descended and were escorted "along the decks" to view such items as truck chassis and oil drums, still plainly visible. Down to the stern we went to see the propeller shaft, rudder and such, then up the other side of the ship to the torpedo hole. Through the hole in the hold the cement bags were still visible. Forward, a gun deck was still in place, and holes were melted in the deck by the fierce heat of the fire beneath. Some of the party alternatively toured the engine room and galley, still fairly intact, and inspected crockery, cooking appliances and engine fittings.

As these wrecks are all declared war graves, all relics are protected, and nothing may be removed (despite the fact that some of these illicit items are for sale in the Honiara market). Many fish and shells now live on and around the wreck. The dive master took food and fed the fish at the end of the dive. The corals and shellfish, now permanent residents of the wreck are helping the ship become an integral part of the reef — a nice use for a rather sad monument.

The Night Dive

The night dive was by far the best part of the trip. We were away by boat at dusk, on site and set up ready to go by nightfall. A nice shallowish reef, maximum depth 70', with large sandy pockets amongst gaps in the reef, large plate corals, staghorn corals, brain corals and more — a perfect site. Many of the corals can be seen fluorescing at night, exhibiting even more vivid colours than by daylight. Myriads of small fish darted in and out of the corals, their eyes and bodies glinting in the torchlight. Even more spectacular were the array of shrimps, mostly transparent, and glowing with some of the most elegant shades of pink and red I have ever seen. Best of all, the shells — all sorts of shells — were out and about. The sand dwellers were out in particular force, so this was the most fruitful of all our dives. Like the corals and shrimps, many mollusks have parts of their mantles and tentacles that fluoresce in the dark. It is also an opportunity to see the animals extended and walking, on top of the sand or coral or weed, depending on what they feed on. Also, night is the only time to collect several species which remain deeply hidden

during the day. A very enjoyable dive in crystal clear water, and then back to the hotel for dinner by 9:30 p.m.

Rock Turning at Low Tide

One day we walked from the Hotel Gizo along the foreshore for a couple of miles to an interesting lagoon and reef area where there was lots of good hermit crab material. We also collected many species of *Trochus* in the lagoon.

On one afternoon low tide, we were taken by boat to a sheltered lagoon with lots of turnable rocks, as well as lots of large sandy area. Two- to three-person teams were best for rock turning — two to lift and hold while the third person picks out the shells: a number of nice *Lambis lambis* and other species were collected, along with lots of strombs, a few cypreaeas, and some nice *Conus textile*, among others. As the tide turned, out of the sand came more *Strombus* species, along with several *Terebra*, turrids and olives, and a host of other small gastropods were collected with little hand dredges. Unfortunately, this was our last day, for this was the best area we had visited.

I guess it is just as well we didn't stay any longer, because our collecting bucket was full. Besides, metholated spirit for preserving shells was horrendously expensive — \$45.00 litre — but the hotel manager allowed us to put small packs of clean (dirt washed off) shells in the big hotel freezer. This was a most useful stopgap measure — in fact, it kept the shells from smelling until we reached Brisbane, Australia two days later, where spirit was cheap.

SPECIES LIST - SOLOMON ISLANDS

<i>Nucula superba</i>	" maculatus	<i>Drupella conus</i>	" ustulata	<i>Clavus canalicularis</i>
<i>Haliotis ovina</i>	" microurceus	<i>Morula anaxeres</i>	<i>Pterygia dactylus</i>	<i>Lophiotoma acuta</i>
" varia	" mutabilis	" biconica	<i>Imbricaria olivaeformis</i>	<i>Turridrupa jubata</i>
<i>Diodora mus</i>	" urceus	" granulata	<i>Cancilla filiaris</i>	<i>Pyramidella sulcata</i>
<i>Euchelus atratus</i>	" wilsoni	" margariticola	<i>Neocancilla papilio</i>	" ventricosa
<i>Chrysostoma paradoxum</i>	<i>Lambis chiragra</i>	" marginalba	<i>Vexillum cruentatum</i>	<i>Bulla ampulla</i>
<i>Thalotia attenuata</i>	" lambis	<i>Nassa sarta</i>	" exasperatum	<i>Pythia seabraeus</i>
<i>Trochus maculatus</i>	" millepeda	<i>Coralliophila neritoidea</i>	" patriarchalis	<i>Arca avellana</i>
" niloticus	<i>Terebellum terebellum</i>	<i>Nassaria sp.</i>	<i>Conus arenatus</i>	" ventricosa
" radiatus	<i>Sabia conica</i>	<i>Pisania gracilis</i>	" bullatus	<i>Barbatia amygdalumtostum</i>
" virgatus	<i>Vanikoro cancellata</i>	<i>Cantharus fumosus</i>	" capitaneus	" foliata trapezina
<i>Clanculus atropurpureus</i>	<i>Cypreaa annulus</i>	" pulcher	" catus	<i>Anadara antiquata</i>
<i>Tectus conus</i>	" arabica	" undosus	" coronatus	" scapha
" fenestratus	" caputserpentis	<i>Engina alveola</i>	" distans	<i>Septifer biocularis</i>
" triserialis	" carneola	" incarnata	" ebraeus	<i>Modiolus philippinorum</i>
<i>Stomatia tuberculata</i>	" cylindrica sowerbyana	" lineata	" eburneus	<i>Pteria penguin</i>
<i>Turbo argyrostoma</i>	" erosa	" medicaria	" emaciatus	<i>Isognomon isognomon</i>
" brunneus	" erroneus	" zonalis	" flavidus	<i>Lima vulgaris</i>
" chrysostomus	" felina	<i>Pyrene deshayesii</i>	" leopardus	<i>Limaria orientalis</i>
" haynesi	" isabella	" scripta	" litteratus	<i>Linea fragilis</i>
" petholatus	" labrolineata	" testudinaria	" lividus	<i>Chlamys senatoria</i>
<i>Nerita albicilla</i>	" lynx	" turturina	" marmoreus	<i>Gloriapallium pallium</i>
" chamaeleon	" mauritiana	<i>Mitrella albina</i>	" miles	<i>Semipallium luculentum</i>
" maxima	" moneta	" ligula	" miliaris	" tigris
" plicata	" nucleus	<i>Nassarius albescent</i>	" moreletti	<i>Pinctada maxima</i>
<i>Littorina scabra scabra</i>	" testudinaria	" cinctellus	" musicus	<i>Codakia tigrina</i>
<i>Planaxis sulcatus</i>	" vitellus	" frateculus	" mustellinus	<i>Chama brassica</i>
<i>Modulus tectum</i>	<i>Trivirostra oryza</i>	" graniferus	" nigropunctatus	" limbula
<i>Rissoina reticulata</i>	<i>Polinices melanostomus</i>	" javanus	" nussatella	" pacifica
<i>Cerithium columna</i>	" tumidus	" pulchella	" pennaceus	<i>Trachycardium enode</i>
" echinatum	<i>Cassia cornuta</i>	" splendidulus	" pulicarius	" unicolor
" nesioticus	<i>Gyrineum cuspidatum</i>	<i>Cyllene pulchella</i>	" quercinus	" orbita
" novaeollandiae	" gyrineum	<i>Pleuroploca filamentosa</i>	" rattus	<i>Vasticardium pulicarium</i>
" salebrosum	<i>Cymatium lotorium</i>	<i>Peristernia incarnata</i>	" sponsalis	<i>Tellina palatam</i>
<i>Clypeomorus bifasciatus</i>	" mundum	" nassatula	" stercusmuscarum	" remies
" coralium	" muricinum	" ustulata	" textile	" virgata
" moniliferus	" nicobaricum	<i>Latirus nodatus</i>	" varius	<i>Quidnippus palatam</i>
" petrosus	<i>Bursa bufonia</i>	" turritus	" virgo	<i>Asaphis deflorata</i>
" tuberculatus	" granularis	<i>Latirulus craticulatus</i>	<i>Terebra affinis</i>	<i>Scutarcopagia linguafelis</i>
<i>Rhinoclavis articulata</i>	<i>Chicoreus capucinus</i>	<i>Latirolagena smaragdula</i>	" argus	" scobinata
" aspera	" torrefactus	<i>Vasum turbinellus</i>	" babylonia	<i>Arctica islandica</i>
" fasciata	<i>Cronia fenestrata</i>	<i>Oliva annulata</i>	" crenulata	" lamellaris
" kochi	" ochiostoma	" carneola	" dimidiata	<i>Periglypta reticulata</i>
" matukense	<i>Thais aculeata</i>	" tessellata	" guttata	<i>Gafrarium dispar</i>
" sinensis	" armigera	<i>Mitra chrysalis</i>	" maculata	" pectinatum
<i>Terebralia sulcata</i>	" kieneri	" eremitarum	" nebulosa	" dispar
<i>Strombus bulla</i>	" tuberosa	" litterata	" parkinsoni	<i>Liocncha ornata</i>
" gibberulus gibbosus	<i>Manicella alouina</i>	" mitra	" punctatostriata	<i>Tapes literatus</i>
" labiatus	<i>Drupa grossularia</i>	" pica	" quoigaimardi	<i>Trapezium bicarinatum</i>
" lentiginosus	" morum	" retusa	" subulata	
" luhuanus	" ricina	" stictica	" undulata	



Market in Honiara where we got our *Cassia cornuta*. Rae Sneddon and Nancy Smith, two members of our party, are in the center of the picture.

THOSE GIANT WOODEN SHELLS FROM THE PHILIPPINES

by Winston Barney

A 12-inch *Cymatium lotorium*, a 4-inch *Cypraea porteri*, and a 14-inch *Conus gloriamaris*! These were a few of the delicately carved and meticulously painted wooden shells we saw for sale in Cebu and Bohol.

The shells were offered by shell dealers at Punta Engano on Mactan Island, in Cebu City, and at Panglao on Bohol. We saw large representations of *Cypraea aurantium* and *Cypraea guttata* like the ones offered at the C.O.A. Dealer's Bourse this past July. But in addition there were *Cypraea lutea*, *Cypraea asellus*, and *Cypraea talpa*, each about 8 inches long. Small versions of *Cypraea guttata* were also offered but they were made from real shells (*Cypraea pulchella*) with a paint job.

Betty Jean Piech and I were part of a group of shellers visiting the Philippines with Pete Bright and Glenn Duffy (**Shells of the Seas and Living World Tours**). She purchased the *Cymatium lotorium* and I, the *Cypraea porteri*, each for less than \$45.00 — but we had to haggle a lot. The *Conus gloriamaris* was an outstanding piece of workmanship with a needle-sharp apex and exquisite color and pattern. However, at 6000 pesos (\$250.00), I had to pass it up.

Not all the giant fakes were so nice. We saw several 15 inch *Murex atomaria* replicas that looked like plastic models. The coloring was not accurate and the operculum had no texture, giving the appearance of a giant brown wooden plug in the aperture.

I would like to see some of the U.S. shell dealers offer the better wooden shells on a regular basis. No doubt there are many other species being copied that we did not see. A healthy trade with shell collectors in the U.S. might spur the artists to further endeavors, perhaps some different cones, olives, or strombs.

My *Cypraea porteri* is deliciously beautiful. The teeth and sulcus are carved in intricate detail and the callus and dorsum are painted with exceptional accuracy. I will display it among my other shells with pride, knowing that, for the moment, it is very rare.

2801 Clary, Fort Worth, TX 76111

*Several articles in *American Conchologist* have dealt with fake shells. See Vol.16, No.2, p.15, "Shellduggery" by *American Conchologist* Art Director John Timmerman; Vol.16, No.4, p.19, "A Record Size *Conus Excelsus*" by Charlie Glass; and Vol.19, No.4, p.21, a photo of two ebony wood *Cypraea rosselli* carved by John Timmerman. And then there's John Timmerman's other sort of fake shell, a painting of *Volva echinatum* Baloney, 1989, pictured in Vol.17, No.2, p.11. Phil Schneider from Palm Harbor, Florida, another COA member and woodcarver, has advertised his beautiful woodcarvings in *American Conchologist* and has sold them at several COA Convention Bourses. And if you haven't seen Gene Everson's giant wooden *Latirus*, well...no one has one bigger than that!

In Memorium

Mary "Ski" Karwowski

George W. Weitlauf

MOVING DAY FOR GIANT CLAMS

The Australian navy has moved 3,000 Giant Clams, weighing more than 20 tons, from their breeding grounds to a secret location elsewhere on the Great Barrier Reef. This was done in an effort protect the endangered species from poachers. Marine biologists artificially bred these clams off Orpheus Island, 50 miles north of Townsville in Queensland, raising the clams to help them study dispersal patterns of the reef-destructive Crown of Thorns starfish *Starfish*, using clam larvae as models.

The clams are also being studied with an eye to clam farming for meat in South Pacific island countries. It is estimated that an acre of clam beds will yield eight tons of clam meat in five years.

The Smithsonian's little free publication, **Sources of Information on Mollusks**, is due to be updated in the next several months. In the interim, the 1991 edition is still available from:

Public Inquiry Mail Service
Smithsonian Institution
SI Building, Room 153, MRC 010
Washington, DC 20560

COA offers FREE one-time ads of 1" or less to members who want to advertise for trading partners. COA assumes no responsibilities for the results of these trades, however; the risk is your own.

NEWS OF TWILA BRATCHER

Twila Bratcher suffered a serious fall outside her home early this year, and sustained traumatic brain injury. But, after seven weeks in the hospital with round-the-clock nursing, she is back home again, in the care of a nurse-housekeeper during the week and her sister and brother-in-law Billee and Robert Brown on the weekends.

Billee says that, "Physically, she is making simply unheard-of progress," and that "she is swimming and walking almost as well as before." Her verbal memory is slower to recuperate, but also doing very nicely. Billee explains that, where Twila did not know her own name or recognize Billee

herself for a long time, "she has gotten back a lot of her memory" now, and "what she doesn't remember, she is learning quickly." Remembering words, expressing herself, recalling such information as people's names, and reading are all skills that Twila is working hard to regain.

Billee and Twila have hopes of attending COA in July, depending on how much Twila has improved on word retrieval. What a remarkable woman you are, Twila. We send you our love and our support, and we hope that we see you and devoted nurse Billee in July at the convention in Panama City.

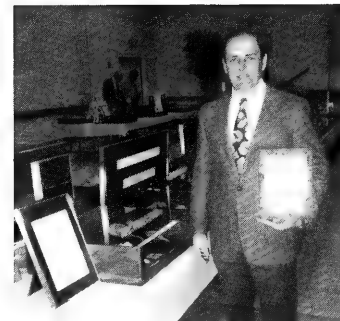
COA TROPHY WINNERS



Rob and Denise Masino won the 1993 Ft. Myers Festival of Shells COA Trophy for their exhibit, "Southwest Florida, A Discovery of Diversity." The Masinos' exhibit also won the Shell Factory award for the best Florida or Caribbean exhibit. Our congratulations to the Masinos.

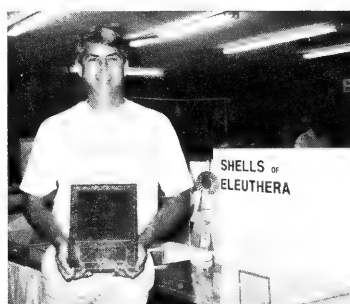


Victoria Punnett of Fort Myers holds her Marco Island Shell Show COA Trophy, as she stands beside her winning display on the Queen Conch. We hear it was excellent, Vicky.



Gene Everson is very proud of that COA Trophy from Broward Shell Show. He won it for an exhibit of "Fasciolaridae Worldwide" in which he displayed an amazing number of species of this very interesting family. Good job, Gene!

Alice and Bob Pace of Miami won the COA Trophy at the 1993 Sarasota Shell Club Show. Their exhibit was an in-depth look at Genus *Melongena* entitled, "Study of the Melongena Complex of Florida and the Caribbean." Nice work, Bob and Alice!



John Chesler, winner of the Treasure Coast Shell Club COA Trophy, displays his prize in front of his winning exhibit, "Shells of Eleuthera. Congratulations, John!



Barbara and Ed Haviland are the "proud parents" of the COA Trophy from the St. Petersburg Shell Show for their exhibit, "The Glorious Scallop. The exhibit also won the Selma Lawson Award at St. Pete.



Karen Couch, of Newton, Kansas, won the COA Trophy at the Georgia Shell Show in April. Her exhibit was "Mollusks of the Mediterranean Province." Congratulations, Karen! It's great to see a land-locked sheller take the prize, too.



A happy Kermit and Gloria Pearson hold their COA Trophy from Sanibel-Captiva Shell Club Shell Fair. Their winning exhibit was entitled, "Our best Kwajalein Shells."

OCTOBER FOSSIL FAIR AT WINTER HAVEN

The 10th annual Florida Fossil Fair, sponsored by the Bone Valley Fossil Society, Inc., will be held Saturday and Sunday, October 9 and 10, 1993 at the Winter Haven Complex, 210 Cypress Gardens Blvd., Winter Haven, Florida. The Fair will feature a lecture, fossil exhibits, a silent auction and dealers' booths. If you wish to attend, there are many hotels and motels in the area or camping is available behind the Winter Haven Complex. If you are interested in exhibiting or reserving a dealer's table, now is the time to act. For more information about the Florida Fossil Fair, call (813) 665-3426 or 644-3778, or write to the Show Chairman, Ed Holman, 2704 Dixie Road, Lakeland, FL 33801. Registration deadline is September 1.

JACKSONVILLE SHELL SHOW CANCELLED

We were sorry to learn that the Jacksonville Shell Club, who had already moved the date of their show forward from June to April to coincide with the Jacksonville Beach "Opening of the Beaches" festival, was then forced to cancel their show altogether. After losing their old show venue, the Flag Pavilion, which was torn down, the management for the new site reneged on its agreement with the club. Bad luck, Jacksonville. We hope you can find a great new site for your show for 1994.

THE RV MITRA

by Gene Everson

Remember those blue postcards sent to COA members in the Fall of 1992? Most of us wondered about the card but didn't respond. And probably none of us who did respond knew what to expect when we were asked to submit a resume to Captain Walter Paine for a trapping/dredging expedition off Florida on the 25 ton, 46' RV **Mitra**.

Walter Paine is Associate Curator of Malacology at the Montshire Museum of Science in Norwich, Vermont, was one of its founders, and was Chairman of the Board for 16 years. This is a regional general science museum, thus the name Montshire — "Mont" for Vermont and "shire" for New Hampshire.

Captain Paine is a retired newspaper editor and publisher, with a long history of boating interest. He finished first in class in a 1979 transatlantic sailboat race. Paine designed the **Mitra** from the hull up, raising the floor for more beneath-deck storage. He also designed the lab between the deck house and aft cockpit, a step up to prevent water from sloshing into the lab from the working cockpit deck level, which gets awash with the seas, and with the hoses washing the dredge debris. The dredge, supported by an A-frame, is winched up and emptied into sorting trays with decreasing-size mesh screens, and flanked by two hoses. With this setup, two or three people can comfortably sort the grunge in a standing position, instead of the usual kneeling on an awash deck.

The **Mitra** has a 46' Jarvis Newman hull, originally designed for offshore lobstering and fishing. It is a sister hull to the Smithsonian's **Beagle IV** which has gone through a 100 mph hurricane, and to the Woods Hole **Asterias**. The builder of these hulls is Lee Wilbur of Manset, Maine, who, as a schoolboy, had once taken a model making course from Paine in the basement of a southwest Harbor, Maine, church, where Wilbur built his first boat.

The **Mitra**, so named for one of Captain Paine's two favorite families (the other is the Muricidae), is powered by a 370 hp G.M.

diesel and a 40 hp Westerbeke diesel generator that does regular electric and hydraulic duty and turns the propeller shaft independently. Using a gallon an hour, it will push **Mitra** economically at 6 knots, well above dredging speed. A huge desalinator eliminates the need for big water tanks, and her 1,000 gallon fuel tanks can be supplemented by a 150 gallon fuel bladder, giving her transatlantic range. The instrumentation includes Loran, GPS, autopilot, speed log and video plotter, all wired together, and two depth sounders, plus an excellent radar. The crew for our voyage consisted of Capt. Paine, Jay McLaughlan, Jim Cordy, and me. We left Snead Island Boatworks in Palmetto, Florida at 4 pm on Feb. 17, 1993. Our first attempt at dredging, later that day, was in 240' depths, approximately 60 miles offshore, based on coordinates provided by Bill Lyons of the Florida Department of Natural Resources Marine Lab. The cable capacity would allow dredging in 900'. In three dredge pulls, the first of which was empty, we collected 3 *Haustellum tryoni*, 2 *Terebra floridana*, a *Terebra lindae*, a *Niso aeglees*, many tusk shells, 11 turrids, 3 *Astarte smithi*, a *Cymatium vespacium*, a *Trivia candidula*, 3 tiny trochids, 2 *Scaphander watsoni*, *Laevicardium laevigatum*, *Pitar fulminata*, and about three dozen other small shells which, after just a quick look, we put into a plastic bag labelled "Miscellaneous."

We had planned, after completing dredging operations at this station, to work our way north and deeper in an attempt to find some of the mollusks in Dr. Ed Petuch's Tampan Relict Pocket, but on the 4th pull, the dredge hung up and we were unable to circle and pull from the back side because of high seas with waves occasionally exceeding 12 feet. While we were trying to power up the dredge with brute force, a hydraulic line started leaking, necessitating severing the cable, and losing the dredge. We returned to port for repairs on February 18th. The weather forecast for continuing northers convinced us to postpone this venture until a calmer season

500 Nottingham Parkway, Louisville, KY 40222



Captain Paine, Jim Cordy and the author sorting shells.

The A-frame support for the winch.



The **Mitra**'s sorting trays.



THE SHELLER'S HANDBOOK

WHAT IS IT?

Occasionally you will see a shell in which the genus and species names are either identical or very close to being so. This condition is called Tautonymy, from the Greek stems meaning "same name." It was a device used by many of the early authors of shells when creating a new genus. They would remove the shell from its old genus and use it for the cornerstone of the new one, along with other shells that displayed the same characteristics. There are actually three forms of Tautonymy:

Absolute Tautonymy in which the spelling of the two names are identical. *Rapa rapa* and *Gari gari* would be examples of this form. (Articles 18 and 68e, International Code of Zoological Nomenclature).

Virtual Tautonymy in which the spelling of the two names is almost identical. *Norrisia norrisii* and *Ovula ovum* are examples of Virtual Tautonymy. Note that it is the stem of the word rather than the Latin suffix that creates the Tautonymy. [ICZN Recordings 69B (2)]

Linnaean Tautonymy in which the identical spelling of a generic or subgeneric name and a pre-1758 name used as a synonym of only one of the species or subspecies originally included in that genus. *The Argonauta argo* of Linnaeus is an example. [Art. 68e (i), ICZN]

While tautonymic titles carry a certain harmony for the collector, they are frowned upon in the scientific community. The original purpose of the binomial classification system was to impart the maximum of descriptive information in a two word title. As tautonymy is, by definition, redundant, its use was discontinued by the ICZN in 1930. Shells carrying tautonymic classification at that time were allowed to stand but there will never be another named in this manner.

WHY IS IT?

The zoological classification system in use today is the result of 240 years of evolution. Carl von Linne created the binomial system in 1758 to deal with the confusion in identification caused by thousands of flora and fauna species being brought back to Europe by explorers. As the name suggests, the system would consist of two words; the first was the genus and identified the general grouping of items, and the second, the species, identified a particular item within the group. Linne sought to classify every natural object of which he was aware. Among mollusks he named only 834 species which were compressed into 36 genera.

As the binomial system gained acceptance, it became clear to many authors that 36 genera were far too limiting and others would have to be created. The question was how to do this without destroying the binomial system. Some of the new material coming to light was clearly outside Linne's genera and was assigned to new genus names based upon their own merits. However, most of these new shells resembled, to some degree, one or another of Linne's original species. Placing them in the Linnaean genus soon led to a massive crowding and wide disparity among the characteristics of the included shells. To overcome this, the common solution was to use the Linnean shell as the basis for a new genus, using Linne's species name for both the genus and species name, thus was born Tautonymy.

A problem with this arrangement arose as later authors continued to subdivide shells into more and more genera. Sometimes the new shells in the genus would have more in common with each other than with the original namesake shell and it would be moved to yet another genus. This problem was not resolved until the naming of a "type" shell for each genus became widespread in the 1830's. "Type" means that it is the descriptive shell for the genus. Any new additions must share its characteristics.

—from *Shell and Tell*, March-April 1992, Newsletter of the Gulf Coast Shell Club, edited by Linda and Jim Brunner



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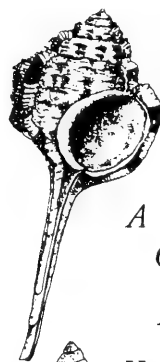
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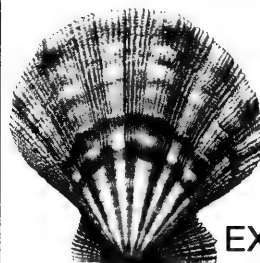
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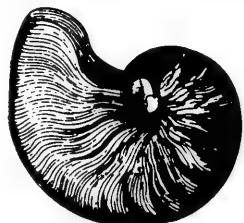
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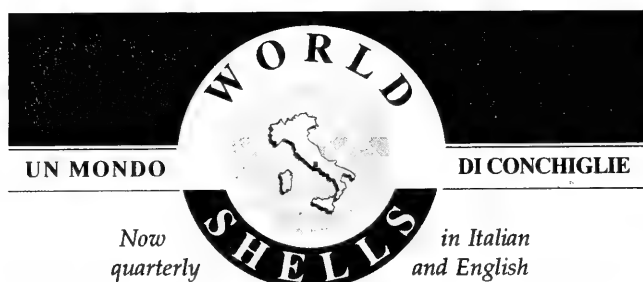


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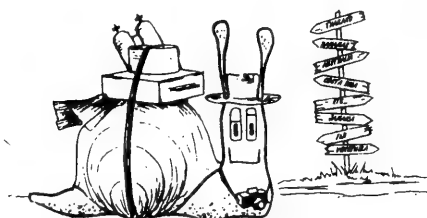
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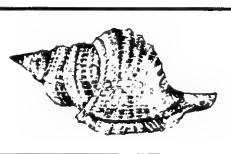


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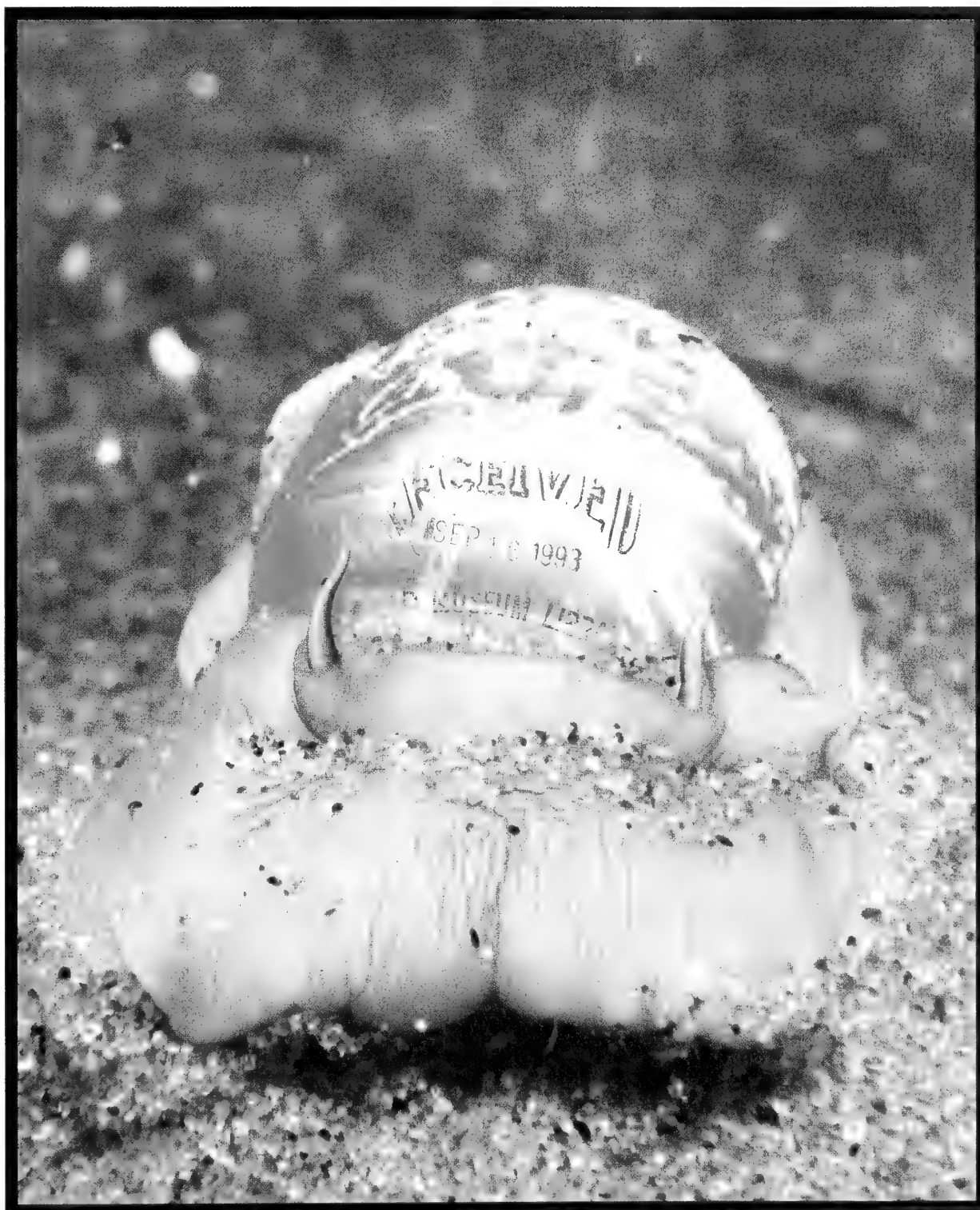
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QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 21, NO. 2³

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In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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COVER: Steven F. Barry, 8925 Crook Hollow Road, Panama City, FL 32404, a diver and underwater photographer (and also the 1993 COA Convention photographer) took this photo of *Lunatia heros* plowing across the sand in 35' at Folley Cove, Rockport, MA. Steve used a Nikonos V with a 1.1 mac. lens using Fujichrome 50 film.

WHY PAY YOUR 1994 DUES EARLY?

Scattered around this issue are ten reasons for such radical behavior. See how many you can find. First person to send Walter Sage a copy of all ten reasons for paying your dues early along with a renewal check and the gold form will get individual recognition in this magazine in December, and will win a specimen of *Chicoreus fulvescens*, with complete data, taken at Panama City during a Panama City Convention field trip (and collected by your Editor at considerable personal risk!). What an offer! So start hunting those reasons.

BOARD TALK...

From the **Membership Chair, BOBBIE HOUCHIN:** Members, kindly take a moment to fill out the enclosed 1994 Dues Renewal Form. Make your check payable to "Conchologists of America" and mail it to Walter Sage, COA Treasurer. On the form, please give us your +4 digit zip code. You can probably find your +4 on a utility bill, phone bill, magazine or a piece of junk mail addressed to you. An example of a zip +4 is 40205-2649.

Remember that your annual membership is based on a calendar year, January through December and your **American Conchologist** is not forwarded to you if you have moved. If you have a change of address don't forget to send it to Walter or me as soon as possible.

We do hope you are enjoying your membership in COA and what it has to offer you: **American Conchologist** keeps you informed, there are annual conventions (just had a great one in Panama City Beach!) to participate in, COA trophy awards, grants for research and more.

COA thanks you for the many ways in which you support the organization.

COA '94 — THE TEXAS CONNECTION

It is with great pleasure that the Coastal Bend Shell Club and its "Texas Connection" invite you to join us in Corpus Christi, Texas, July 17-23, 1994 for the 22nd annual COA Convention. Leave your coat and tie at home and enjoy a Tex-Mex fiesta and a home-style barbeque in "The Sparkling City by the Sea."

Corpus Christi offers numerous attractions including the Texas State Aquarium, the Aircraft Carrier Lexington Museum with its historic aircraft, Corpus Christi Museum of Science and History, Art Museum of the South, and Las Carabelas, the Christopher Columbus Fleet, all of which are easily accessible from our convention hotel. Barrier island beaches and Padre Island National Seashore are a short drive away.

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Y'all come!

start over again. So PLEASE pay those dues now! Your dog will thank you! it it would be time for another gold form to arrive anyway, and the whole thing would again, and you would have to send another letter, but by that time we'd all be at the convention you'd be missing because you didn't get your March issue, and before you know your letter might get damaged by the post office, or your dog might eat it and get sick you'd have to figure out who to write to find out what happened to your March issue, and notice right away, and by the time you did notice, it would be April, or even May, and you'd forget to renew at all, and March might come and your dog might be well, but you next, and you might get caught up in the holiday season, or your dog might get sick, and the next, and you might forget to renew the next month, and the

WANDERINGS OF AN ITINERANT MALACOLOGIST XII The Marshall Islands

by Donald R. Shasky

The Republic of the Marshall Islands is composed of 29 atolls covering 750,000 square miles, 10 of which are uninhabited. The atolls are composed of numerous islands, most of which have no roads to interconnect them with the neighboring islands. There is air transportation between some of the atolls, but it is very expensive. Intra-atoll travel by commercial boats is erratic. There are no specific departure times. Leaving may take three or four days, even when the boat is waiting at the pier.

The total population in 1988 was 43,335, 19,664 of whom live on Majuro Atoll. The Marshalese are happy, friendly, and gentle people. They like to party; they have parties for everything they can think of, with music, dancing, an abundance of things to eat.

On Majuro Atoll is the headquarters for the school system of the eastern Marshall Islands. Bruce Lane, the director, is an accomplished diver and shell collector, though unfortunately, with his administrative duties, he finds little time to dive.

I first visited Majuro in May 1991 with my wife, Ursula, and fellow COA member Doug Von Kriegelstein. At that time the people of Ine Island, Arno Atoll, about 12 miles east of Majuro, were requesting that a school be built for them. The property had already been obtained, but funds for the school buildings were yet to come. Now, the headquarters for the school system of the eastern Marshall Islands is on Majuro, and its director, Bruce Lane, also happens to be an accomplished diver and shell collector (though unfortunately he has little time to dive because of his administrative duties). We went by Bruce's boat to dive at Ine Island, and after seeing the beautiful, friendly children, my wife and I decided to play a major role in funding the construction.

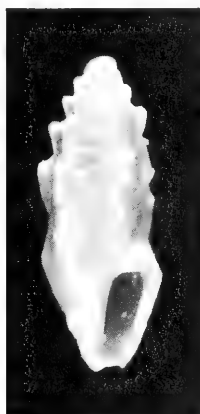
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Discrevinia balba



Daphnella reeveana



Unnamed turrid

PLEASE HELP!!!!

We are beginning a treasure hunt and we need **your** help. COA is starting to put together a "History of the COA Trophy." Any information you have would be greatly appreciated. We would like to know the name of the shell show, the date of the shell show, the name of the winner, the name of the winning exhibit and any other pertinent information available. If you know when the COA Trophy was first awarded at your club's shell show, that would be very useful information as well. We would also like any pictures associated with the COA Trophy. If you can help, please send your clues regarding the COA Trophy to:

Lucille Green, COA Historian
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Houston, TX 77070

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(COA member from Minnesota Marilee McNeilus and her husband are also involved in this project.)

In late 1992, I returned to Majuro alone, to dive again, and also to see the progress in the construction of the school. I found two temporary classrooms already in use, as well as a two-room dormitory for the teachers and a storage shed. In addition there was a permanent classroom in use, totally made from mahogany, including desks and seats! The lumber had been hewn from logs that had drifted onto the atoll after the breakup of a ship many years before.

I have been diving at Majuro, Arno, and Mili Atolls during my two visits. It can be very exciting diving, especially when the "wolf packs" of gray sharks move in. These territorial sharks are small and very aggressive. Divers do get bitten. On the two occasions when I felt threatened, I ascended several feet, and they disappeared.

Within the lagoon of Majuro, there are several sea mounts whose tops are 50-70 feet down. Some of these spots were very productive for live microscopic species, such as *Discrevinia balba* (Laseron, 1956) and *Sansonella kenneyi* (Ladd, 1966).

Some of my best dives have been outside of the reef of Ine Island, where I have found the yellow form of *Favartia guamensis* Emerson & D'Attilio, 1979; *Distorsio pusilla* Pease, 1861; *Cypraea beekii* Gaskoin, 1836; and *Latirus nodatus* (Gmelin, 1791).

At the same location I have found what is probably a new genus and species of an exotic turrid, and probably a new species of a very small mitrid. I also have, on temporary loan from Bruce Lane, perhaps the largest known *Cypraea stolidus kwajaleinensis* Martin & Senders, 1983. It came from the stomach of a fish taken at 100 feet at Ine Island. The cowrie measures 19.3mm wide and 39mm long.

For readers interested in small and microscopic shells, I have had four papers in the past two years in the *Festivus*, the organ of the San Diego Shell Club, all of which included Marshall Island taxa. I am currently preparing additional papers on Indo-Pacific species found in the Marshall Islands.

If you're wondering what else there is to do in the Marshall Islands besides shell collecting, you're with me. I am still waiting for others who have been there to tell me. On a scale of 1-10, the best restaurant on Majuro is, at most, a 3. There are a couple of grocery stores where you can shop for T-shirts. You can also walk the 20 plus miles from the east end to the west end. I prefer to sort through my dried grunge, picking out the small shells that are there. Whoopee!

Would I return? Of course.

Next time: Back to Borneo (Sabah).

We're sorry to hear that Ben Wiener became ill at the close of COA and had a short hospital stay in Panama City. But we're glad to report that he is now feeling much better.

LAND SNAIL ENTHUSIASTS — A Different Species?

by Barry Roth

One of the goals (and, certainly, pleasures) of conchology is identification — that is, associating a specimen with a name. Depending upon how well systematists have done their work, a name is a key to further knowledge about the specimen and where it fits in the system that is nature. We are used to thinking that we can identify a shell by looking at it or, failing that, having a more experienced conchologists look at it.

But one fact sets land snail enthusiasts apart from other conchologists: not every species of terrestrial snail can be identified from the shell alone. To that extent, land snail study is not strictly conch-ology at all.) To know what species you have in hand, it is often necessary to dissect the soft parts, usually the reproductive system. Evolution has not proceeded for the convenience of shell collectors, and those of us who specialize in land mollusks have to live with that fact. The actual dissection is not difficult, and many readily available books, e.g., Kerney and Cameron, 1979), contain clear instructions.

Here are some examples from my main region of interest, western North America: The snails of the arid mountain ranges of the California deserts tend to look very much alike. (Drive Interstate 15 or California Highways 15 or 178 through the Mojave Desert and you will be amazed that snails can live there at all. For many years, snails from Slate, Argus, Panamint, and Avawitz Ranges were regarded as a wide-ranging species, *Eremarionta argus* (Edson, 1912). Not even statistical analysis gives a convincing reason for separating the shells of this array into more than one taxon. However, the careful work of Walter B. Miller and the late Wendell O. Gregg showed that the snails from populations in the Slate and Argus Ranges were significantly different internally from those in the other ranges (Figure 1), and could not be considered the same special. In fact, in Miller's opinion, the difference was sufficient to justify naming a new genus, *Eremariontoides* Miller, 1981.

The Argus Range includes the type locality of *E. argus*, which became the type species of the new genus. The snails from the Panamint and Avawitz Ranges, with anatomy as usual in the genus *Eremarionta*, were described as a new species, *Eremarionta greggi* Miller, 1981. Here, then, are snails classified in two separate genera, essentially indistinguishable on shell characters. A collector with an unlocalized shell (or one simply labeled "Inyo County") would have no way of knowing which of the two it was. A curator who happened to drop a drawer of

unnumbered *Eremariontoides argus* and *Eremarionta greggi* shells would have a real problem!

It was suggested that *E. argus* had evolved from an ancestor that was like *E. greggi*, and I agree that the unique characters of *E. argus* are "derived" with respect to the common ancestor of *E. argus* and *Eremarionta*. However, an analysis recently completed (Roth, in press) suggests that, in spite of being geographically close, *Eremarionta greggi* is not the species most closely related genetically to *Eremariontoides argus*. It now seems more probable that the matching shells of *E. greggi* and *E. argus* represent an astonishing case of convergent evolution from different-looking ancestors.

In the 1930's, George Willett, principally an ornithologist, took a passing interest in the land snails of the California deserts. Oral history says Willett believed that, since no snails inhabited the hot, dry desert floor between the mountain ranges, the snails in separate ranges could not interbreed and were, *ipso facto*, different species. With this assumption in mind, he felt no great obligation to provide diagnostic details justifying his new taxa — as anyone who tries to use his abbreviated shell descriptions soon discovers. In preparing keys to the land snails of California, I often found that I could not point to any objective character to sort one Willett taxon from another. Yet, since the anatomies of most are unknown, I was not comfortable with synonymizing them.

Willett's practices did not escape the notice of his contemporaries. Without naming names, S. Stillman Berry (1943) pointedly wrote that the snails of the California deserts had "suffered rather severely at the hands of the dilettante." Henry A. Pilsbry was more charitable and simply quoted most of Willett's descriptions without comment.

Along streams in the North Coast Ranges of California live snails of the genus *Vespericola*. They are forest-floor dwellers, with a bristly periostracum (Figures 2, 3) that often traps spider webs and debris so that in the wild the shell comes to look like nothing more than a small mammal's droppings. (I use an ultrasonic pen cleaner to clean them for study.) Pilsbry, the last author to monograph *Vespericola*, placed all of those that have a sort of dog-leg flexure of the basal lip over the umbilicus in *Vespericola megasoma* (Pilsbry, 1928) and those in which the inner lip curves without dilation in front of the umbilicus in *Vespericola columbianus* (Lea, 1938).

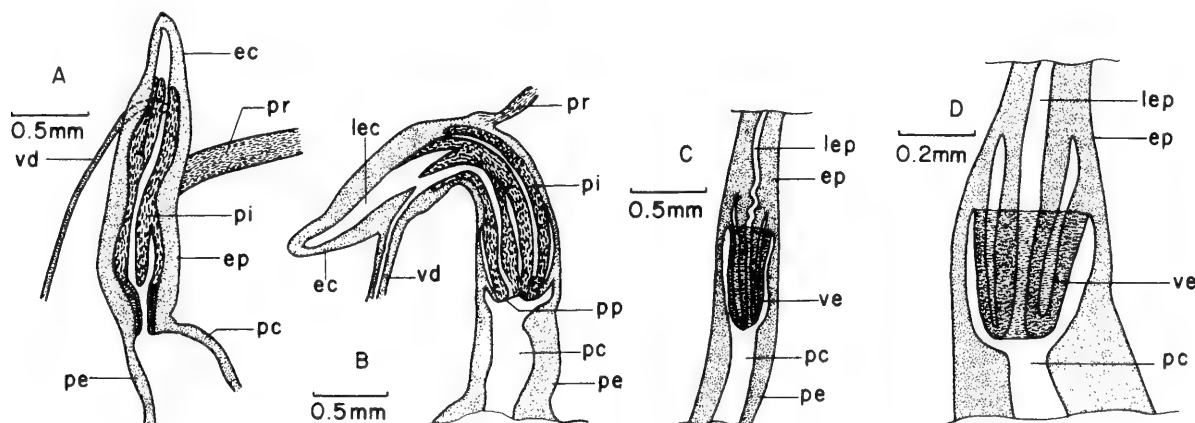


Figure 1. Reproductive structures of two species of California desert land snails, after Miller (1981). A, B, *Eremariontoides argus*. C, D, *Eremarionta greggi*.

When Walt Miller and I looked into the reproductive anatomy of populations with "*V. megasoma*-type" shells, we found no fewer than five different structural types. Because it is highly unlikely that snails with such different reproductive organs could interbreed, we concluded that at least five species are present.

However, we have yet to find shell characters that will separate all species in all cases. Museum lots of shells from populations where the anatomy is unknown can be identified only as "*Vespericola*, species undetermined" for the time being.

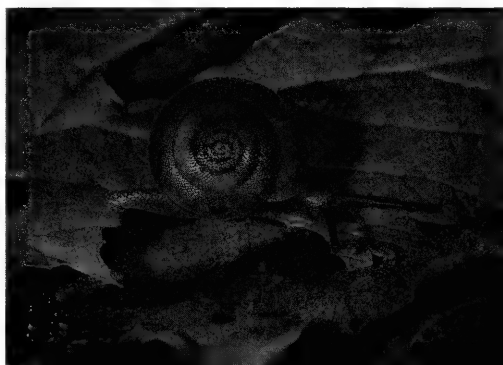


Figure 2. An undescribed species of *Vespericola* from the coast of Sonoma County, California.

Figure 3. SEM photograph of bristly surface of *Vespericola* shell from Buck Creek, Humboldt County, California.

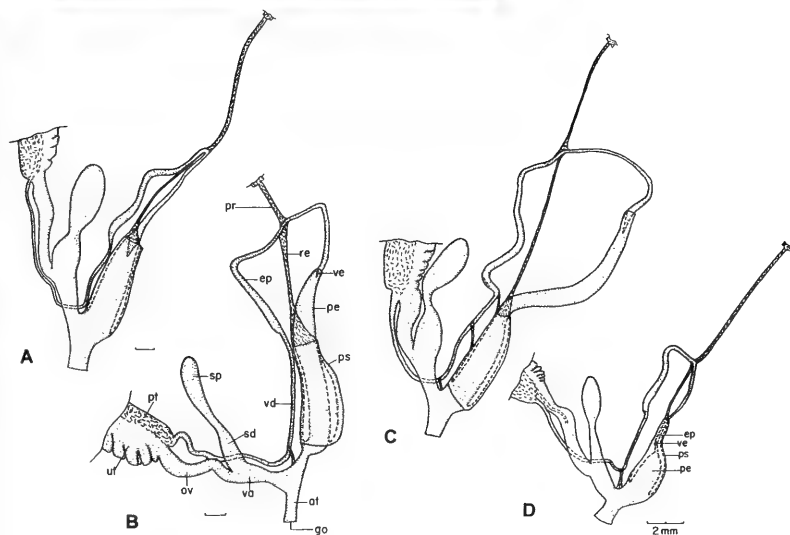
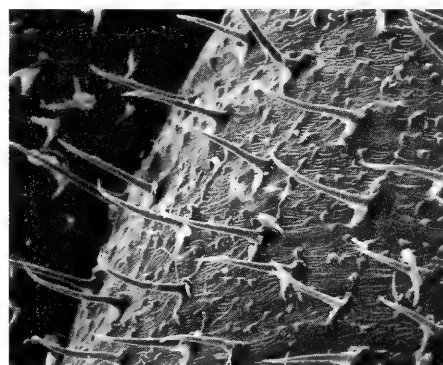


Figure 4. Anterior portions of reproductive systems of four species of *Vespericola* with "*V. columbianus*-type" shells, after Roth and Miller (1993). A, *Vespericola columbianus*. B, *V. pilosus*. C, *V. marinesis*. D, *V. orius*.

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"WORLD SIZE RECORDS" CONTINUES

We've received the following letter from Dr. R. Tucker Abbott, Co-Editor of *World Size Records*:

Dear Conchologists:

You are perhaps aware of the death in November 1992, at the age of 84, of our friend Robert (Bob) Wagner who spent so many years giving of his services to the upkeep of the "World Size Records." We shall miss him, but I am pleased and thankful to inform you that Mrs. Barbara Haviland will be carrying on his duties.

If you have sent in records since October 1992, Barbara will process your reports and inform you of any new records.

We hope to issue a new list in early 1994. Meanwhile, all correspondence relating to World Size Records should be directed to Barbara (or, if you wish, to me): Mrs. Barbara Haviland, #51, 6950 46th Avenue North, St. Petersburg, FL 33709.

INLAND SHELLING

by Teri Marché

With special thanks to Dr. David Smith of Wabash College, Crawfordsville, Indiana, for reviewing this manuscript and for assistance with identification of material.

Indiana is six hundred miles from the nearest ocean. So when I moved from the east coast to Bloomington, and Indiana University, I knew that my conchological pursuits would be drastically altered. I just hoped that this would not spell an end to shelling altogether. Happily, it hasn't.

As I look back on the chances and decisions that brought us to live on Fullerton Pike, Monroe County, Indiana, approximately 39° 07' N, 86° 34' W) in the Leonard Springs area, I am amazed. As it turns out, Leonard Springs is home to a diverse fauna of land shells.

I have learned a lot about terrestrial shells since taking up residence here. The first thing is that shells are not evenly distributed in any given woods. They have certain favorite spots in the forest, around the spring, and even within my back yard. These "spots" range in size from entire hillsides to a single tree stump. Each species has its own set of favored conditions for food and shelter. Look in the wrong place and you will find a molluscan desert.

The second thing I have learned is that land snails have their seasons. Although they are permanent residents, they remain hidden for much of the year. In early spring, when mating and egg-laying are in full swing, land snails are easily found. They may remain active through the warm weather, but as the leaf litter is reduced or washed away by summer rains, there is less cover and the ground dries out more quickly, so they dig down to moist levels of soil and move about less often. In winter these animals bury deeper, past the frost line, and remain there until warmer weather returns. Because I have a real aversion to digging pits on the steep hillsides in this area, I collect mainly in that active early spring season. Then I use my hand rake to dig under leaves and my geology hammer to pull apart old logs.

I would like to present an account of the terrestrial mollusca of the Leonard Springs area, which actually encompasses several springs. In this account I will concentrate on the easternmost one, opposite our house. But to tell the story right, I must go back to the beginning.

3830 Fullerton Pike, Bloomington, IN 47403



1. Author on the rocky ledges at the top of the hillside overlooking east Leonard Spring.

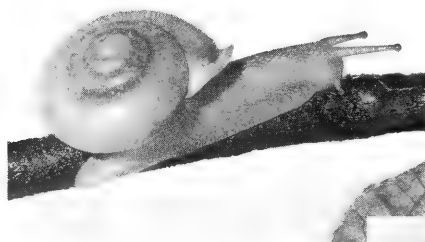
Indiana is limestone country, and southern Indiana is the heart of it. Here limestone beds are thick and of such high quality that stone from this area was chosen for the Washington Monument and the Empire State Building. Laid down in the Paleozoic inland sea, these limestone beds lie flat, never having been subjected to the deformation and uplift of east coast formations.

But southern Indiana is anything but flat. As any freshman earth science text will explain, limestone is particularly susceptible to the eroding effects of water. Karst formations, sinkholes and caves that collapse into steep gullies, are the result of both surface and groundwater acting upon the limestone substrate. At the end of the last ice age, with melting glaciers just to the north, there was a lot of water flowing over these rocks and the result is some very rugged topography.

Our easternmost one of the Leonard Springs is a piece of that rugged topography, a bowl-shaped sinkhole that drops some seventy feet to the opening of the Spring itself and another thirty feet as the water flows out to the south, forming a small creek. To the north and west of the Spring the steepest cliffs block the cold winter winds. The eastern hillsides slope more gently into a series of smaller and shallower V-shaped gullies and channels. In this area, protected from the northwest wind, with a southern exposure open to sun all winter, spring comes early. The surrounding second-growth forest is a mixture of hardwoods including maple, oak, and tulip poplar. Here the first wildflowers begin to show in late February. By mid-March they are well along as the pace increases.

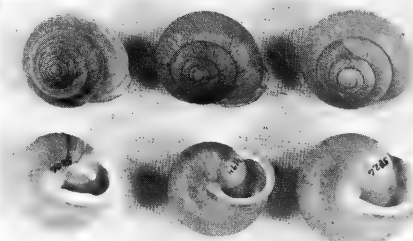
This south-facing hillside above the spring is not only exposed to the sun, it is also well situated to catch the spring rains which often come up from the Gulf of Mexico. Add to that the area's almost legendary humidity and you have a land snail heaven. These animals have everything they need: limestone for building shells, early warmth, moisture, and plenty of mold, fungus and rotting wood on which to feed.

"The student of Indiana mollusca must first learn something of their habits before he [she] can hope to obtain a representative collection." This statement, so true, is found in one of the earliest and most comprehensive works on the mollusca of Indiana, written by Richard Ellsworth Call in 1900. In the process of exploring and discovering the local land shells, I have attempted



2a. *Mesodon thyroideus* (Say, 1816), 21mm. The mottled markings are on the animal's mantle and not on the shell, which is completely plain when empty.

2b. Left, top & bottom, *Mesodon elevatus* (Say, 1821), 20mm. Center, top & bottom, *Mesodon thyroideus* (Say, 1816), 21mm. Right, top & bottom, *Mesodon zaletus* (A. Binney, 1837), 24mm.



to learn about their habits. What follows are observations resulting from over two years spent exploring the terrestrial mollusca of eastern Leonard Springs.

Mesodon elevatus is among the snails that appear early in the spring, surfacing first in mid- to late-March close to the Spring. It loves the south-facing hillside just above, and as the season progresses it can be found high on the steepest slopes, on and under leaves. It is gregarious in the spring and is often found in clusters of several individuals. By mid-April, *M. elevatus* is dispersed more widely, but it always maintains an association with steep, moist, leaf-covered spots. As Cal reported, these animals emerge covered with the clay in which they hibernate during the winter. Those that overwinter as adults usually have a worn periostracum and are not the best of specimens. I generally leave them to lay their eggs. The most beautiful shells are those that were immature the previous fall, when they began their winter hibernation. These re-emerge as mature adults, reddish-brown in color, and are found deep within the narrow gullies to the east of the Spring through most of April and May. Then you have to step carefully on the trail; if it is wet, *M. elevatus* will be crawling openly at any time of day. I also have a small private colony under the leaves in the stone gutter beside our garage. These I watch, but leave alone. By the end of June the burst of activity is over and *M. elevatus* seems to disappear from sight.

Mesodon zaletus is a most confusing shell. For a long time I identified it as *Triodopsis albolabris*. Only after comparing my specimens to type material was I able to determine that these are indeed *M. zaletus*. Call reported that *M. zaletus* will be found in association with *M. elevatus*. He was right. At Leonard Spring both species share similar habitat preferences, except that *M. zaletus* seems to like the upper slopes above the Spring better than any other situation. I have found these snails crawling on fallen leaves and branches. They usually emerge about the same time as *M. elevatus*, but never in the same large numbers. As the season proceeds, freshly broken shells can be found among the rocks of the highest ledges, probably cracked open by birds or rodents for food.

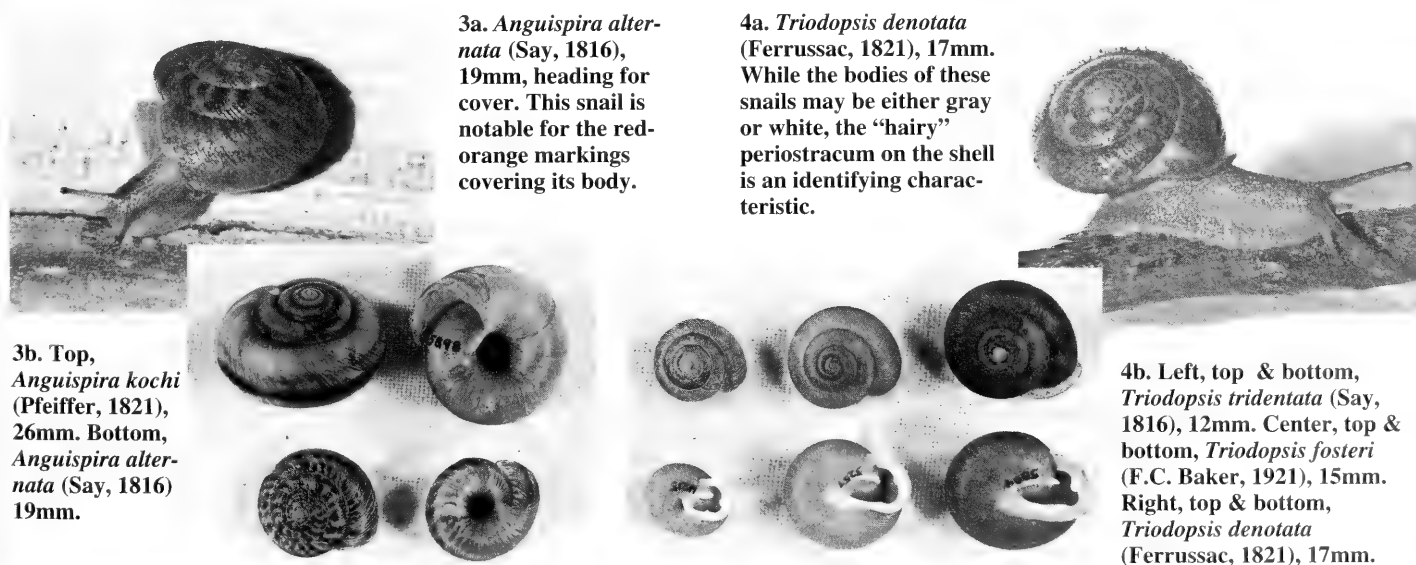
Mesodon thyroidus is between the previous two shells with regard to size and number. It is more common than *M. zaletus*, but never matches the population density of *M. elevatus*. *M. thyroidus* is a climber. Juveniles, especially, may be found several

feet up the sides of trees. I once found an adult four feet above the ground in a bush in my back yard. *M. thyroidus* also has the longest active season. The earliest specimen I have found was under leaves on the last day of January, 1993. Although *M. elevatus* and *M. zaletus* seem to disappear from sight in June, occasional *M. thyroidus* turn up through the entire summer.

Anguispira alternata is by far the most common land shell in the entire area. It prefers high, drier hillsides, but may be found anywhere timber meets the ground. It is especially abundant in the creeping myrtle in my front yard. After the first warm rain of the season, they come out at night in mind-boggling numbers on the pavements. Then I will walk in the grass. Numerous *A. alternata* may be found long after other species have disappeared from sight and in areas where almost no other shells exist. Because they are so common and because good, empty specimens are so easily found, I almost never take *A. alternata* alive.

Anguispira kochi, a close relative of *A. alternata*, is an entirely different story. Empty shells, with worn periostracum, turn up all over the upper slopes and in my yard. These are often found partially buried. Live *A. kochi* have almost completely eluded me here. Call claims that they are the first shells to emerge in the spring "when first the warm rays of the vernal sun penetrate to [their] hiding place[s]." I have been out hunting under the first warm rays of the vernal sun, and the later hot rays of the summer sun and the last faint rays of the autumnal sun, with little luck. I have hunted in early morning and late evening. Then one autumn, during cool rain in late October, my husband turned over a clump of wet leaves to find my first live specimen. There was only one. But at least I knew where to look. The shell blended well with the oak leaves that then covered the ground. For over a year that animal lived in my snailery and I watched it closely. It was the most "sluggish" thing in there, burrowing in the soil around rocks or in the corners and never moving unless encouraged. Usually it was the last snail to wake up and crawl. But it would never go far, and by morning it was always re-buried. I have since found a number of them at another site in Indiana, but *A. kochi* remains elusive at Leonard Springs.

Triodopsis denotata, easily my favorite shell from this area, is found in very specific locations. They are always in or under very decayed wood, never near the Spring, but on the upper hillsides to the east. My husband, an amateur entomologist suggested



3a. *Anguispira alternata* (Say, 1816), 19mm, heading for cover. This snail is notable for the red-orange markings covering its body.

4a. *Triodopsis denotata* (Ferrussac, 1821), 17mm. While the bodies of these snails may be either gray or white, the "hairy" periostracum on the shell is an identifying characteristic.

3b. Top, *Anguispira kochi* (Pfeiffer, 1821), 26mm. Bottom, *Anguispira alternata* (Say, 1816) 19mm.

4b. Left, top & bottom, *Triodopsis tridentata* (Say, 1816), 12mm. Center, top & bottom, *Triodopsis fosteri* (F.C. Baker, 1921), 15mm. Right, top & bottom, *Triodopsis denotata* (Ferrussac, 1821), 17mm.

one day that we tear open a log to search for beetles, and I ended up with my first *T. denotata*. I have also found them beneath the bark or against the ground, but always where there is dark, reddish-brown rotten wood. I have never seen any in white, pulpy, rotten logs. When hunting these snails, I find it is best to leave the pieces of wood piled up instead of scattered about; then *T. denotata* will be found there again and again, any time it is wet, from late March until early November. I have never seen these snails crawling in the open, and they are hard to keep in a snailery because they don't take well to lettuce.

Mesomphix cupreus, another favorite of mine, differs quite markedly from *T. denotata*. It is always found on the ground buried under fallen leaves near rock outcrops. I have never seen it on top of the leaves or on any other surface. Although many are found high on the steep slopes overlooking the Spring, they are especially plentiful on a single hillside to the east. Wherever I find one, I expand the search in that area; there is usually another nearby. *M. cupreus* first appears in late March and by the end of June may be found only in limited numbers.

Triodopsis tridentata is the most widely dispersed shell in the area of Leonard Springs, although never in large numbers. *T. tridentata* may be found throughout the woods. All it seems to need is cover of some kind: leaves, rocks, wood, anything will do. In places where nothing else is found, *T. tridentata* may appear, even through August when most other mollusks are difficult to find. It especially favors the creeping myrtle in my front yard; during wet weather *T. tridentata* is easily found under rocks in that garden.

Triodopsis fosteri is found only rarely in the high woods to the east of the Spring. But just across Fullerton Pike is a house with a garden that is full of them. The owner considers *T. fosteri* a pest, and I am welcome to all I can take. I only take adults, usually a few dozen each year. In this garden, bordered with limestone blocks, an eclectic selection of plants are growing, everything from mint to horseradish. It is otherwise a fairly typical yard, relatively flat, lots of tall grass, a few trees and much open space. The *T. fosteri* are to be found deep in the tallest grass and herbaceous weeds, on and under the rock borders, and all over the pavement. I have tried transplanting some to my own property, but they don't seem to like the trailing myrtle. It may be too woody and hilly here. *Triodopsis fosteri* are absolutely super in a snailery, voraciously gobbling up lettuce and crawling about. I have occasionally seen them with head extended deep into the aperture of another, freshly dead, shell. They remain in that

posture for quite a while and certainly seem to be cleaning out the organic matter.

Two other polygyrids, *Euchemotrema fraternum* and *Stenotrema stenotrema*, are widely scattered throughout the area, as solitary individuals or as pairs. *Euchemotrema fraternum* is the more common of the two. Both species share similar habitat preferences, and may be found in association with leaves and fallen wood high on the upper slopes and drier woodlands. I can often find them on the north-facing slope behind my garage, and empty shells occasionally turn up on our brick patio.

Discus patulus, a small, flat, reddish shell, is always found in the red-brown wood of very rotten logs. However, they do not burrow through the pulp, but instead find openings in the log, under the bark and between wood chips. Hollow logs are the very best places to look. Break into one of these and *D. patulus* will be seen all over the inner surfaces in considerable numbers. This is another species that will benefit from leaving torn-up wood pieces in a pile instead of scattered about. Given a few wet weeks, more *Discus* will move back in, usually about four or five inches down into the pile. Like *Triodopsis denotata*, with whom they share this habitat, *D. patulus* will be found as long as the weather is wet and temperatures are above freezing. They will not do well in a snailery, as they refuse to eat vegetable matter.

Ventridens ligera and *V. intertextus* may occasionally be found in the area, widely scattered in the moist, loose soil under leaves. *Ventridens ligera* is the more common of the two and I have found large numbers of these elsewhere in the county. *Ventridens intertextus*, quite pretty with a band of reddish brown, is very uncommon in this area. I have found only a single individual at Leonard Springs, in loose soil under leaves. Since arriving in Indiana, I have found exactly four *V. intertextus* in all of my collecting; two of them were empty.

In addition to these larger animals, another dozen very small shells (1-4mm in length) may be found at Leonard Springs as well. They are rather sparsely represented in the woods, but very prolific in my yard. The myrtle especially provides a home for:

Carychium exile — in a May Apple patch in the myrtle, also near the creek flowing out from Leonard Spring.

Gastrocopta armifera — also likes the lawn in general

Gastrocopta contracta — especially in a single rotting tree stump surrounded by myrtle in the front yard.

Gastrocopta pentodon — not in the myrtle, but in a crack between the brick pavement and the garage door.



5. *Mesomphix cupreus* (Rafinesque, 1831), 25mm. with a generally white body and a beautiful, glossy brown-black shell.



6a. *Stenotrema stenotrema* (Pfeiffer, 1842), on the left, has a more high-spired shell than *Euchemotrema fraternum* (Say, 1824) on the right. Both shells, at 9mm, are covered with a hairy periostracum, but *E. fraternum*'s has finer, smaller hairs.

6b. Left, top & bottom, *Stenotrema stenotrema* (Pfeiffer, 1842), 8mm. Right, top & bottom, *Euchemotrema fraternum* (Say, 1824) 9mm.

Gastrocopta procera — only four live specimens found, in a small part of one rotting tree stump in the back yard.

Glyphyalinia indentata — best in the myrtle, but in the other gardens as well.

Helicodiscus parallelus — by the score.

Hawaiiia minuscula — also around the tree stump below the back bedroom window, and in the lawn.

Pupoides albilabris — not many, but they like the myrtle best.

Strobilops labyrinthica — around small bits of rotting wood in the myrtle.

Vallonia pulchella — likes the grassy areas too.

Vallonia costata — by the score between the bricks in the garage door pavement and throughout the lawn.

Zonitoides arboreus — really prefers the tree stumps in the back yard.

In two years I have learned a lot about these terrestrial mollusks, some through direct observation, some through reading. Recent texts on land shells are few in number and I have found no single guide to fit my needs. **How to Know: the Eastern Land Snails** is a modest volume by John Burch, published in 1962. I use it for the good illustrations and information about geographic ranges, but there is very little about habits and habitats. I personally find his dichotomous keys difficult to use. Through a friend, I came to possess a copy of Pilsbry's four-volume **Land Mollusca of North America** (1939-1948), which has numerous good illustrations, geographic ranges and a bit on habitats. It is a valuable anatomical reference as well, since it contains diagrams of internal organs of most species. But it is too much of a good thing. It is so inclusive that I rarely begin with it, but rather use it to double-check what I learn elsewhere.

Two papers on Indiana mollusca offer revisions and addenda to Call's early work. Blatchley and Daniels (1903) added several species that had been recorded from Indiana after 1900. The entries are written in much the same style as Call's, with a descriptive paragraph that sometimes includes habitat information. Goodrich and van der Schalie (1944) published a list of Indiana mollusca which includes recent taxonomic revisions (i.e., currently accepted names). But I keep going back to Call's (1900) original work for shell descriptions and comparisons of similar species. Call includes a section on how and where to search for shells as well as information on habitats and habits. Despite the antiquated style, most of it is still useful. The major shortcomings of this volume are the poor illustrations and the outdated nomenclature. Using Goodrich and van der Schalie's work, I have

written the modern names into my copy of Call to make it more convenient. However, I must take exception to one of Call's collecting rules. He advises collectors to avoid "dry hillsides with southern exposures." In the area of Leonard Springs, the south-facing hillsides are where the action is; I have found little on any north-facing hill that I have searched.

Call also describes a short snail season that may occur in the fall. I have also seen this. My first summer here was one of appreciable drought. The snail season literally dried up in June, and restarted with the welcome rains of September. There were, however, fewer active snails in the fall season. Last summer was unbelievably wet, yet the season still ended in June. There was no autumnal season at all despite favorable temperatures and rain.

There is one absolute truism for land shells: no rain, no shells. But the best time to find mollusks is after the rain has stopped. Snails don't seem to enjoy being pelted, and I can understand why.

Perhaps the lesson in all of this is to "collect wherever you are." All my life I had lived within a short drive of the ocean. Then I had to leave it behind. Now I can step out my front door and start collecting. The result of this situation has been frequent trips to the same areas, great for the discoveries that go beyond simply accumulating specimens. Now I am learning about the creatures and they are interesting indeed.

The following land shells were found at Leonard Springs from February, 1991 until January, 1993.

Subclass PULMONATA

Order Archeopulmonata

Family CARYCHIIDAE

1. *Carychium exile* I. Lea, 1842

Order Stylommatophora

Family PUPILLIDAE

2. *Pupoides albilabris* (C.B. Adams, 1841)

Family VALLONIIDAE

3. *Vallonia costata* (Muller, 1774)
4. *Vallonia pulchella* (Muller, 1774)

Family VERTIGINIDAE

5. *Gastrocopta armifera* (Say, 1821)
6. *Gastrocopta contracta* (Say, 1822)
7. *Gastrocopta pentodon* (Say, 1821)
8. *Gastrocopta procera* (Gould, 1840)

Family STROBILOPSIDAE

9. *Strobilops labyrinthica* (Say, 1817)

Family DISCIDAE

10. *Helicodiscus parallelus* (Say, 1817)
11. *Discus patulus* (Deshayes, 1830)
12. *Anguispira alternata* (Say, 1816)

13. *Anguispira kochi* (Pfeiffer, 1821)

Family GASTRODONTIDAE

14. *Ventridens intertextus* (A. Binney, 1841)

15. *Ventridens ligera* (Say, 1821)

16. *Zonitoides arboreus* (Say, 1823)

Family VITRINIDAE

17. *Hawaiiia minuscula* (A. Binney 1840)

Family ZONITIDAE

18. *Glyphyalinia indentata* (Say, 1823)

19. *Mesomphix cupreus* (Rafinesque, 1831)

Family POLYGYRIDAE

20. *Mesodon elevatus* (Say, 1823)
21. *Mesodon thyroidus* (Say, 1816)
22. *Mesodon zaletus* (A. Binney, 1837)
23. *Stenotrema stenotrema* (Pfeiffer, 1842)
24. *Euchemotrema fraternum* (Say, 1824)
25. *Triodopsis denotata* (Ferrussac, 1821)
26. *Triodopsis fosteri* (F.C. Baker, 1921)
27. *Triodopsis tridentata* (Say, 1816)

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7. *Discus patulus* (Deshayes, 1830), 8mm, sports a heavily ribbed, reddish shell. The animal is clear white with red-orange stripes.



8. *Ventridens ligera* (Say, 1821), 11mm. The small, glossy, smooth shells are completely plain and transparent, and allow markings on the animal's bodies to show through.

Because it keeps Walter Sage busy running to the bank.

SPOTLIGHT ON:

Doris Underwood, COA President 1992-94

"Doris" means "born of the sea." What an appropriate name for Doris Underwood, newly reelected President of COA! Born on Long Island's South Shore, the infant Doris appears in baby pictures at water's edge, and she shares the same birthday (September 28) with COA's own "Mr. Seashell," Tucker Abbott (she points out he's nine years older!). A lifelong shell collector, she amassed her first collection, a wooden cigar box full, as a small child. "They were probably mostly bivalves, badly worn," she adds.

Life near the sea has always been factor in her life. Growing up on Long Island, she moved with her family to Annapolis, Maryland in 1952, where they lived near the South River, again close to the water they all enjoyed. There wasn't much shelling to be done, but fossiling, rock hounding, and lots of boating and fishing kept Doris' spare time and interest occupied. In fact she was on a neighbor's boat for a fishing trip when she met Bill Thomas, whom she married a few months later.

Their honeymoon was to — where else? — Florida, just the first of many trips to different parts of this water-bounded state. Travel, along with seawater, runs in Doris' blood. When she was a child, her father was a construction engineer whose work took him to many locations around the U.S.; Doris and her mother joined him summers and vacations. Doris says, "I've never lost the desire to see a new place." As newlyweds, Doris and Bill Thomas, another travel addict, started out with a travel trailer, but soon graduated to a motor home — "more space to bring home shells and rocks." They also joined the Family Motor Coach Association, closing the circle of Doris' chief enthusiasms.

They moved to Florida upon Bill's retirement. First steps in their new home? They joined the Astronaut Trail Shell Club (she's a Survivor of the Sirenia — ask her about that story), the Canaveral Gem and Mineral Society, and the Central Florida Roadrunners Chapter of the FMCA. "Travel was still a major interest for Bill and me," Doris maintains, "but shells took the forefront over rock hounding. With the many places to collect and the glorious scallop dumps of Cape Canaveral then available, we advanced from shoe boxes to wooden cabinets."

When Bill Thomas died in 1982, Doris immersed herself in her shells and in travel, remaining active in the Central Florida Roadrunners. She took up bridge and met her second husband, Bob Underwood, one of the bridge "pros" she played with. Of course he'd have to be a travel lover as well, and when they married in 1986, Doris joked he'd married her for her motor

home. They traveled around the world looking for shells for Doris, stamps for Bob. Australia was next on their list, but, tragically, Bob died early this year. Doris says, "I miss him terribly. I feel so fortunate to have been blessed by two fine husbands. Bill and Bob were both my very best friends and companions."

Membership in COA since 1978 has brought increased involvement and interest in shells, in the Xenophoridae, to be precise. Doris still loves this family, and looks for specimens with unusual attachments. Her shell collection has expanded through the years, through trading, and through travel. One of her best trips was to Alaska where she acquired some *Arctomelon stearnsi*.

Filling up a room in the loft, half the back bedroom and now the foyer closet, 27 cabinets, and dozens of plastic shoeboxes in the garage, she's still running out of space. She saves everything. After the Xenophoridae, she took on the popular Marginellidae, winning several COA and duPont Trophies. Recently, she's been concentrating on the Buccinidae and on limpets. And she's undertaken to catalogue her collection on the computer.

Another sidelight to Doris' career is her active participation in COA. She did a spectacular job as one of the chairmen for the 1990 Melbourne Convention. (Small wonder! Doris was, before her retirement to Florida, a dynamic businesswoman, working until 1952 as a Commercial Representative for the New York Telephone Company, and then in the Personnel Division of Woodward and Lothrop in

Washington D.C. When she left the company after 21 years, she was Director of Employee Benefits.)

She brought her considerable talents to the COA Board of Directors the next year when she was elected Vice-President. After an active year working with the Club Representatives and on an ongoing revision of the COA Constitution, Doris succeeded Glen Deuel as President in 1992. She spent much of her term, in spite of Bob's serious illness and worsening condition, at a revamping of the way COA works, aiming at making it a more effective and smoother-running organization, and at bringing us up to standard in compliance with the Florida tax laws.

So dynamic is her leadership, yet always with an ear for problems, always with time for a small detail, that the 1992 Nominating Committee selected Doris to run for a second term. Only once before have we had a two term president — Dick Forbush in 1983-85 — but COA is an "equal opportunity employer" so it is fitting that the second such honor be accorded to a woman. And who more worthy than this capable Doris, lifelong sheller, traveler, businesswoman, and child of the sea.



Doris at her desk. Note one of those shell cabinets reflected in the mirror behind her head.

PAY THOSE 1994 DUES

If you are a satisfied member of COA, if you like the conventions, or if you just enjoy the magazine, please pay your 1994 dues now. They're payable September 1, and if you do so, it makes Walter Sage's job as Treasurer so much easier for him (we promise he won't buy shell fabric with it!) and probably for you too.

In Memoriam

Joanne Lightfoot

May 5, 1930 — July 6, 1993

Conchology lost one of its most dedicated and innovative votaries with the passing of Joanne Lightfoot in her 64th year. She died at home in Sedona, Arizona after a long and valiant fight against cancer.

Born in Chicago, Joanne moved with her family to Larchmont, New York while in her mid-teens. In 1952 she graduated from St. Lawrence University where she was elected to Phi Beta Kappa. John Lightfoot took her as his wife in 1959, and the couple raised their family in Larchmont. In 1980, after John's partial retirement, the Lightfoots moved to Sedona.

Joanne possessed unusual motivation and skills. She was accomplished in bridge and tennis. She was an active volunteer in a number of civic organizations. Her main avocation, especially in recent years, was conchology, however. Early in the course of her involvement she was captivated by tiny marine shells. This focus resulted from the diversity and beauty of this element of the fauna, but, perhaps more passionately from the challenge presented by their relative neglect in the scientific literature, especially with respect to taxonomy. Thus she became a bit of a pioneer — an unusually zealous, largely self-taught student. As she probed deeper into problems of identification, there were inevitable ambiguities and countless other barriers

to progress. Joanne, never possessed of faintness of heart, persevered to the end, unravelling many of nature's mysteries. Aside from ample and deserved self-satisfaction, her curiosity and tenacity produced a series of five substantial papers on the Caecidae, which will be principal references for students well into the next century. Likewise, the collection, bearing her unique and indelible stamp, will be an inspiration and scientific resource for generations of researchers. It will be housed in the Florida Museum of Natural History along with her prized and well-used microscope and camera.

Diminutive in physical stature, the plucky and talented lady became a giant in our avocation, illuminating us on the wonder of these lilliputian creatures. She leaves behind a very grateful community who misses her deeply and especially regrets that she was taken from us at the prime of her life as a conchologist.

Along with John, Joanne leaves three daughters, Susan Moran of Sherman Oaks, California, Catherine Bayne of Los Angeles, and Carrie DeVore of Sedona; a brother, James van Noppen of Miami; and two sisters, Nancy Thomas of Hawaii and Susan Cowen of Winchester, Massachusetts; and six grandchildren.

—Harry G. Lee

BOOK REVIEWS

Science 260: 1553-1962. 11 June, 1993, A.A.A.S., cover in color, scattered text half-tones, figures, tables. 8 1/2" X 11", magazine. \$6.00 (newsstand); \$87.00 (annual subscription).

While a periodical is decidedly extralimital in this section of *American Conchologist*, the writer could not ignore a splendid cluster of scientific essays appearing in this benchmark weekly. *Science* is read by a wider and more populous segment of the scientific community than any other "trade" journal targeted at this audience. Its editorial standards are austere enough to accord "plum" status to its "reports," as research papers are called. In this issue (11 June) the cover, lead articles, top billing in "This Week" (its preface/digest), "the three reports," and a guest editorial focus on evolution of invertebrates, most conspicuously mollusks, in the tropical New World over the past 10,000,000 years or so.

The first notice given the topic is a breathtaking cover photo, in which about three dozen extinct *Hystriovasum* spp. from the popular Sarasota A.P.A.C. pit are deployed in phalanges, spanning the field entirely, and in full color. It's been years since a mollusk has been elevated to Cover Girl status on this journal. The tone is set!

In his editorial (pp. 1603-4) Geerat Vermeij provides an overview of the fascinating geological events affecting the Central American isthmus and the Atlantic and Pacific waters which (more than) once commingled over it during Tertiary times. He stresses the lack of uniformity in evolutionary rates among selected groups of invertebrates during the "biological, oceanographic, and tectonic changes that bombarded tropical America."

In the first of three consecutive papers, Jeremy B.C. Jackson, Peter Jung, et al. (pp. 1624-6) report on the "Diversity and extinction of tropical American mollusks and emergence of the Isthmus of Panama." The authors fastidiously examine the evolutionary history of *subgenera* of Caribbean marine mollusks (far too many undescribed fossil species to allow those to be an accurate measure of biodiversity). To do this they sought out the best (largest and most stratigraphically sound) collections available and included an analysis of the Recent fauna by literature review. Using a series of compact and innovative bar graphs (which require a re-reading or two so as to allow the reader full appreciation), they present convincing evidence to support a mass extinction in

the late Pliocene (about 1,700,000 years ago) coincident with an origination rate (new subgenera appearing) of an uncannily similar degree. Thus there was no net loss of biodiversity as had been held as almost dogmatic fact in scientific circles for years! In fact biodiversity remained fairly constant since the early Miocene (about 8,200,000 years ago) in the Caribbean. Applying the same analytical method to Strombinid (Buccinoidea: Strombina and relatives) species, selected because of Jung's excellent and detailed taxonomic work down to the species level, a similarly-timed extinction/origination event revealed itself. Both Panamic and Caribbean elements disappeared, but the compensatory origination was limited to the Panamic (Pacific) side of the Isthmus.

On the next page, Warren Allmon, Gary Rosenberg, Roget Portell, and Kevin Schindler begin an analysis of "Diversity of Atlantic Coastal Plain mollusks since the Pliocene" (pp. 1626-1629). The authors scrutinize the species composition of Pinecrest Pliocene (Florida) and of the Recent faunas. An extinction rate of about 70% is found among marine gastropods (over 5mm in adult size). Using ratios of macro- (over 5mm) to micro-gastropod and gastropod to bivalve species in the Recent fauna, they demonstrate that there was little, if any, reduction in species diversity — that the mass extinction was offset by a comparable orgy of origination. Thus these workers substantiate the subgeneric level analysis of the preceding paper (Jackson et al.). A further iconoclastic perspective is introduced with the comparison of a new database of Recent tropical Western Atlantic (Rosenberg, in press) with the better known Panamic marine mollusca diversity data. *Mirabile dictu*; hold your hats; the Atlantic fauna is not less diverse at the species level! Another long-held belief appears baseless in the face of improved knowledge.

The final component of this trilogy is provided by Nancy Knowlton et al. ("Divergence in proteins, mitochondrial D.N.A.," pp. 1629-1632). Using biochemical probes, the authors demonstrate a succession of speciation events in Snapping Shrimp inhabiting each side of the Isthmus of Panama. Thus it appears that barriers to gene flow, producing genetic divergence and species origination occurred at least four times in the geologic history of this originally trans-Isthmian fauna. These events began as far back as about 10,000,000 years ago. Changes

(Continued on page 23)

THE GENUS *VOLUTA* IN THE CARIBBEAN

by Emilio García

The genus *Voluta* is represented in the Caribbean by *Voluta musica* Linne, 1758, *Voluta virescens* Lightfoot, 1786 and the *Voluta demarcoi* "complex," that is, a series of population variants that may or may not constitute true species or even subspecies. Although all but the nominal species were originally placed in the genus *Falsilyria*, a more appropriate placement is in the genus *Voluta* (García, 1988; Poppe & Gotto, 1992).

Voluta musica inhabits the Caribbean from at least the Gulf of Maracaibo in western Venezuela to the island of Martinique in the eastern Caribbean. It is a very polymorphic species, with more than twenty named forms, all of which today's workers on the Volutidae have recognized as synonyms. The *Voluta demarcoi* complex, however, is another matter.

Weaver and du Pont (1970) treated *Voluta demarcoi* Olsson, 1965 as a subspecies of *V. musica*. They differ enough, however, to be considered separate species (García, 1988; Poppe & Gotto, 1992), particularly in the consistent difference in protoconch shape. The general confusion arises when one considers the taxa that have been raised recently for certain forms of this complex. The confusion is valid, and a direct result of the describing of "new" species before they are thoroughly investigated, understood and defined. Among the polymorphic family of the volutes, the *demarcoi* complex reigns supreme. The number of whorls in the protoconch, the number of plaits in the columella, the color and pattern of the specimens, are parameters that we cannot rely upon. They are variable and inconsistent within populations from general vicinities, at least as we now know them.

The locality data of all the different variants of this complex are, at best, general. Shrimp fishermen go out for one or two months at a time, and lobster fishermen usually stay for no less than 180 days. All they are able to pinpoint about the locality of the specimens they bring back, therefore, is the general area in which they were working — Caratasca Keys, Misteriosa Banks, Gorda Banks, Cayos Viborillas* — but these areas are so large and this complex is so variable that, even though one may be looking at the catch of a single fisherman from a single general area, one is able to separate specimens into different populations.

We know nothing about the animals of the proposed taxa for this complex, except for the typical *demarcoi*, its form *sunderlandi* and a similar form collected live in Cayos Cochinos, just south of Roatan Island, by Peggy Williams. I had the opportunity of observing several live specimens of typical *demarcoi*, a very active mollusk, which I kept in my hotel room in Roatan Island for several days. At night I would be awakened when the animals

climbed over the edge of the bucket, some six inches above the water level, and dropped to the floor.

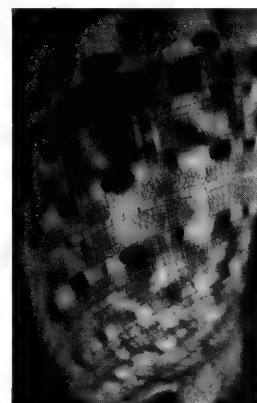
The animal has a large foot, exceeding the length and width of the shell by at least one quarter of an inch. It is pale tan in color, mottled with brownish-purple spots about a millimeter and a half in diameter. At the same time it is covered with myriads of tiny dots similar to those appearing on the surface of the shell. These markings are more prominent in the first quarter-inch of the foot, nearly fading out altogether as the foot joins the body. The anterior end of the foot is wide, resembling the propodium of the Olividae or the Harpidae. The siphon is rather wide and is mottled with rusty-brown. It tends to appear striped when retracted.

As the different forms of the *demarcoi* complex were discovered, one could not at all be sure about their true geographic distribution, even a rather general one, and even today we still don't know, for reasons previously explained, where many of the unusual forms come from. The complex, however, does seem to inhabit all of the western Caribbean, from Misteriosa Bank, north of Roatan Island, to Pedro Bank in Jamaica, and south to Panama (see map on page 17).

Typical *demarcoi*, that is, specimens with orange-brown shells and dark brown maculations, seem to occur only along the northern coast of Honduras. They range in size from 53mm to at least 104mm; they live in depths from about 20' to 90'. *Voluta demarcoi* f. *garciai* (Petuch, 1981), is only a rare color variation of typical *demarcoi*, and is always collected together with them. Within this same area there are populations that stand out from the rest due to a change in bottom conditions, for example the specimens collected in Rio Esteban (Pl. IV, 6). These are smaller, shinier, and have a tan-colored shell.

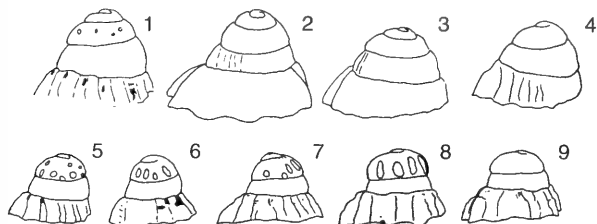
Although I have never seen specimens of typical *demarcoi* trawled near the coastal areas of Nicaragua, there is a very light-colored form trawled offshore, in about 160' (Pl. IV, 9). The seafloor here is covered with large amounts of algae and shrimpers try to avoid it because it clutters the nets, so this form is not easy to obtain. There is some fishing activity off Limón, Costa Rica, but I don't know of anyone who has obtained any specimens from the boats. The next population I am aware of is trawled off Portobelo, Panama, in about 200'. This form has been named *ernesti* (Petuch, 1990). Similar specimens have been trawled near Caratasca Key, Honduras.

When I obtained the first specimen, and now the holotype, of *Voluta demarcoi* f. *retemirabilis* (Petuch, 1981), it came from a fisherman who did both lobstering and shrimping. He had recently come back from a trip to Caratasca Key and said it probably came from there. When I sent it to Dr. Edward Petuch, I passed this information on to him, and it became the type locality. This is one of the rarer forms and it took me several years before I could confirm its true locality, Misteriosa Bank, about 200 miles northwest of Roatan Island and, therefore, the northernmost locality for the genus *Voluta*. It is collected in lobster traps. There are specimens of the *demarcoi* complex that approach this form as such, and have appeared in recent



Pattern of *V. retemirabilis*

* The name for this area appears in the National Geographic Atlas as "Viborillo." This is in error. The correct name is "Viborillas," Spanish for small snakes, in reference to the large number of these animals that inhabit the keys.



PROTOCONCHS: 1-3 *Voluta musica*; 4. *Voluta morrisoni* form *harasewychi* (Rosalind Banks, Honduras); 5. *Voluta demarcoi*, typical form (off Punta Patuca, Honduras); 6. *V. demarcoi*, deep water form (off Caratasca Keys, Honduras); 7. *V. demarcoi* form *hilli* (Cayos Viborillas, Honduras); 8. *V. demarcoi* form *kotorai* (Corn Islands, Nicaragua); 9. *V. demarcoi retemirabilis*.

(Continued on page 17)

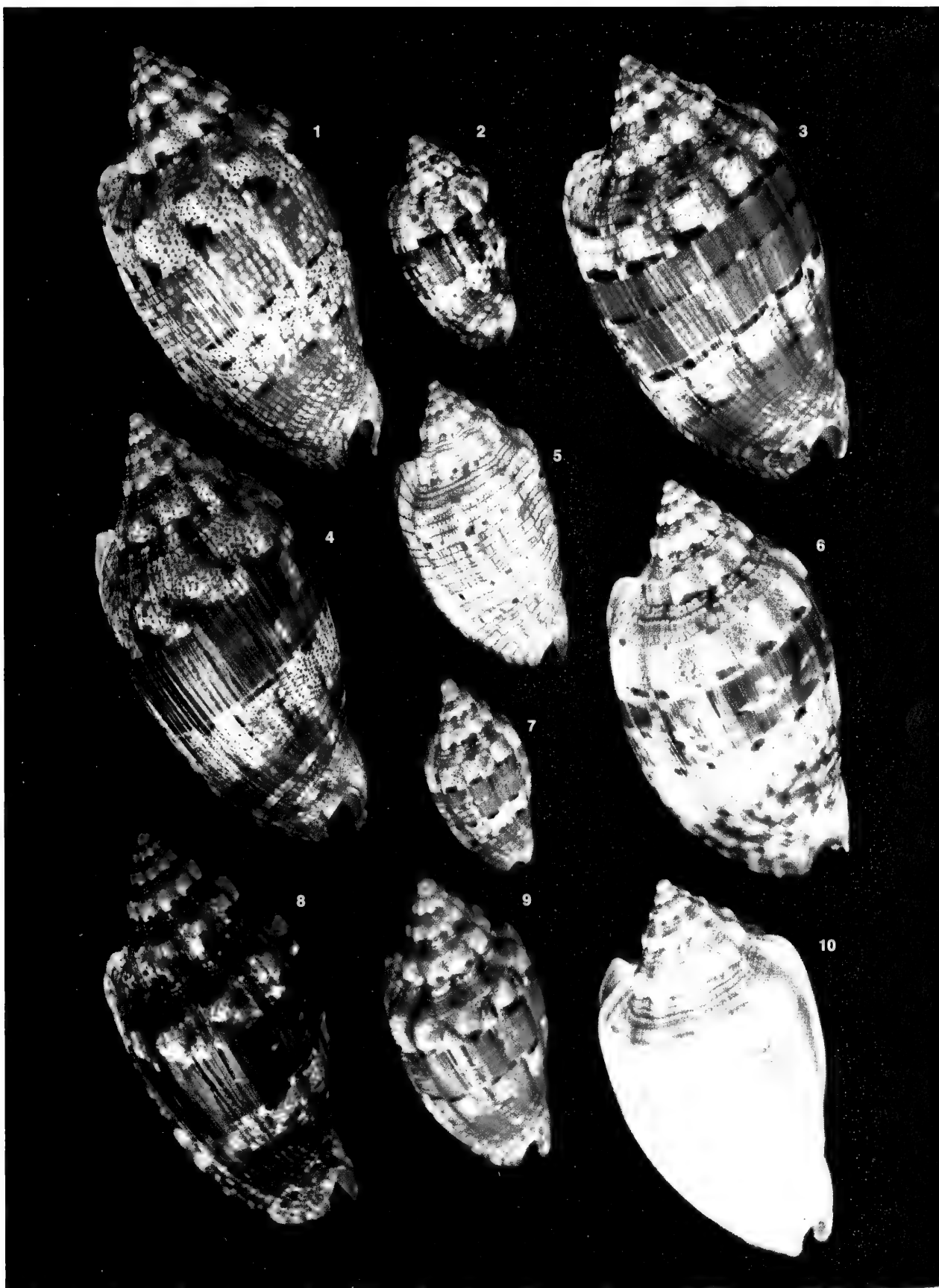


Plate I: *Voluta hilli* and cf. *hilli*: 1) Cayos Viborillas 2) Locality unknown (47mm adult) 3) Cayos Viborillas area
 4) Cayos Viborillas area (94mm) 5) Locality unknown 6-7) Gorda Banks 8) Cayos Viborillas 9) Pedro Banks, Jamaica
 10) Gorda Banks

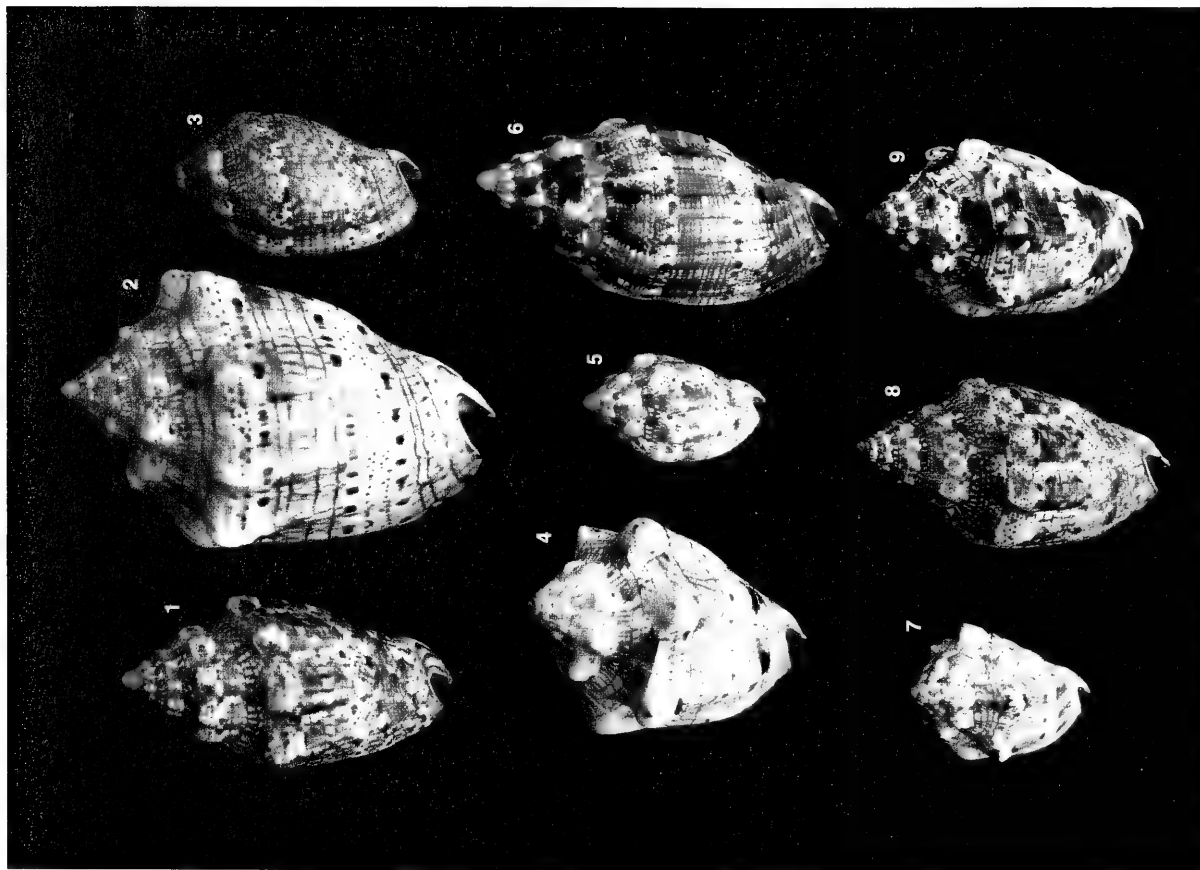


Plate II: *Voluta musica*: 1) Martinique 2) Estado de Sucre, Venezuela (92mm)
3) Mauay Bay, Venezuela 4) Tobago 5) Barbados (42mm) 6) St. Lucia 7) Bonaire
8) Grenada 9) Aruba.

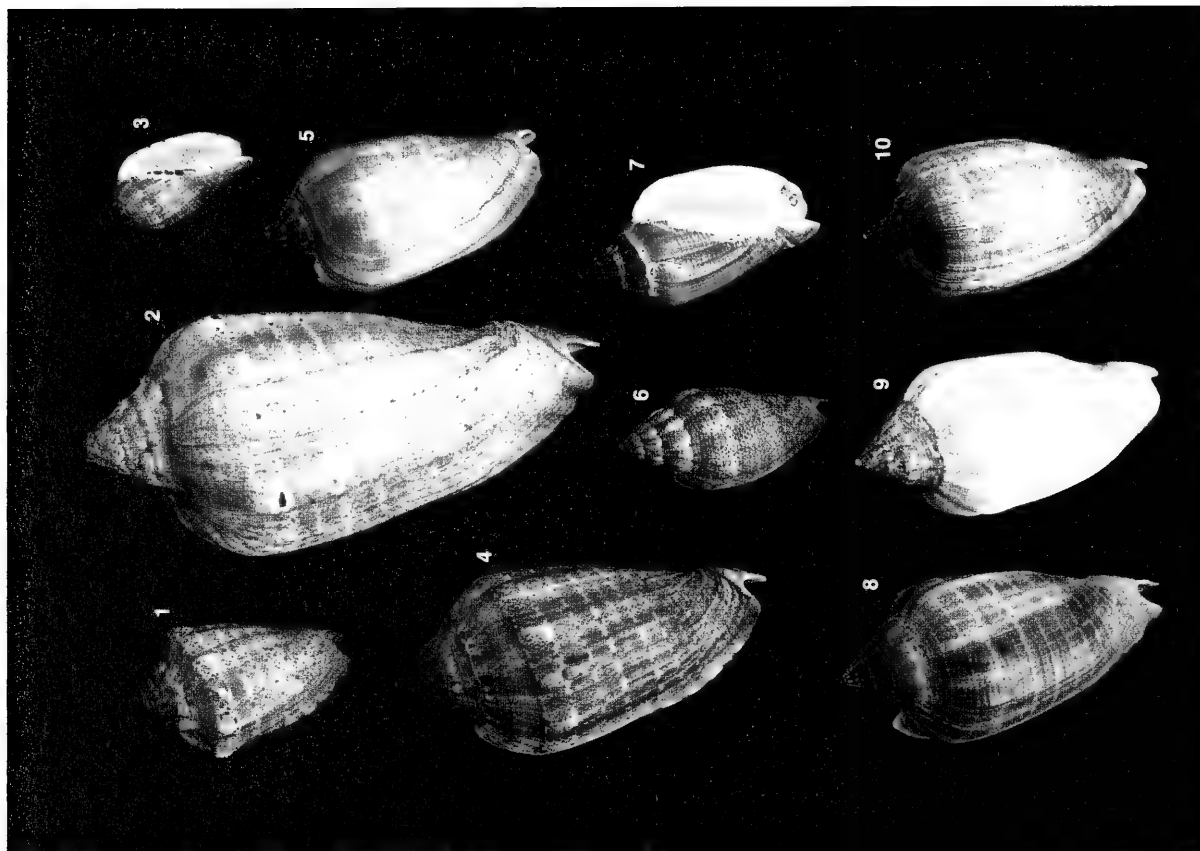


Plate III: *Voluta virescens*: 1) Panama 2) Golfo Morrosquillo, Colombia 3) Belize
4) Colombia 5) Nicaragua 6) Honduras 7) Honduras (albinistic) 8-10) Nicaragua.

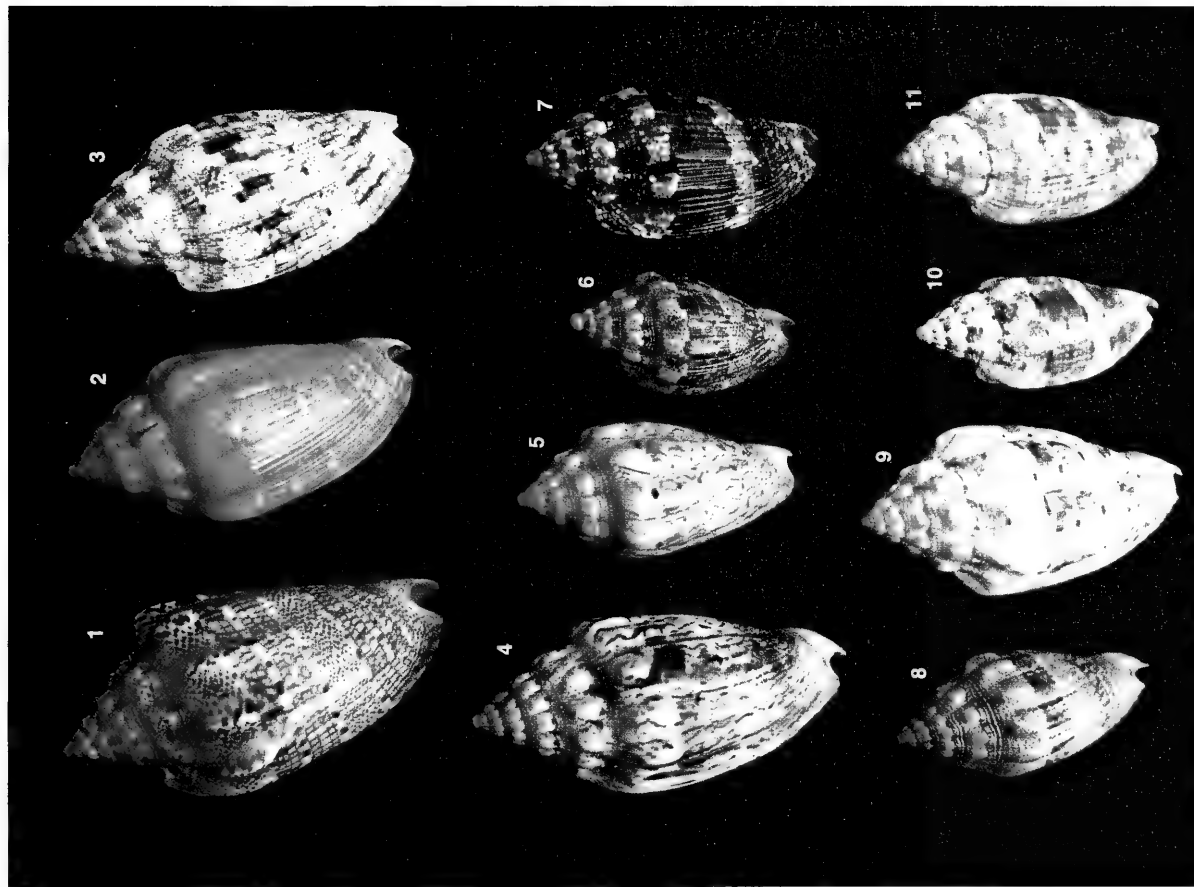


Plate IV: 1) Typical *Voluta demarcoi* 2) very rare orange form, supposedly from over 300' 3) "Deep-water form" off Caratasca Keys in 165' 4) *V. garciai*, adult, off Punta Castilla 5) *V. garciai* paratype, locality unknown 6) *V. demarcoi*, Rio Esteban form, trawled in 60' 7) *V. demarcoi*, locality unknown 8) Typical *V. demarcoi* off La Cieba, Honduras 9) *V. demarcoi*, form trawled in 160' off Cayos Miskito, Nicaragua 10-11) *V. demarcoi*, elongated form, locality unknown.

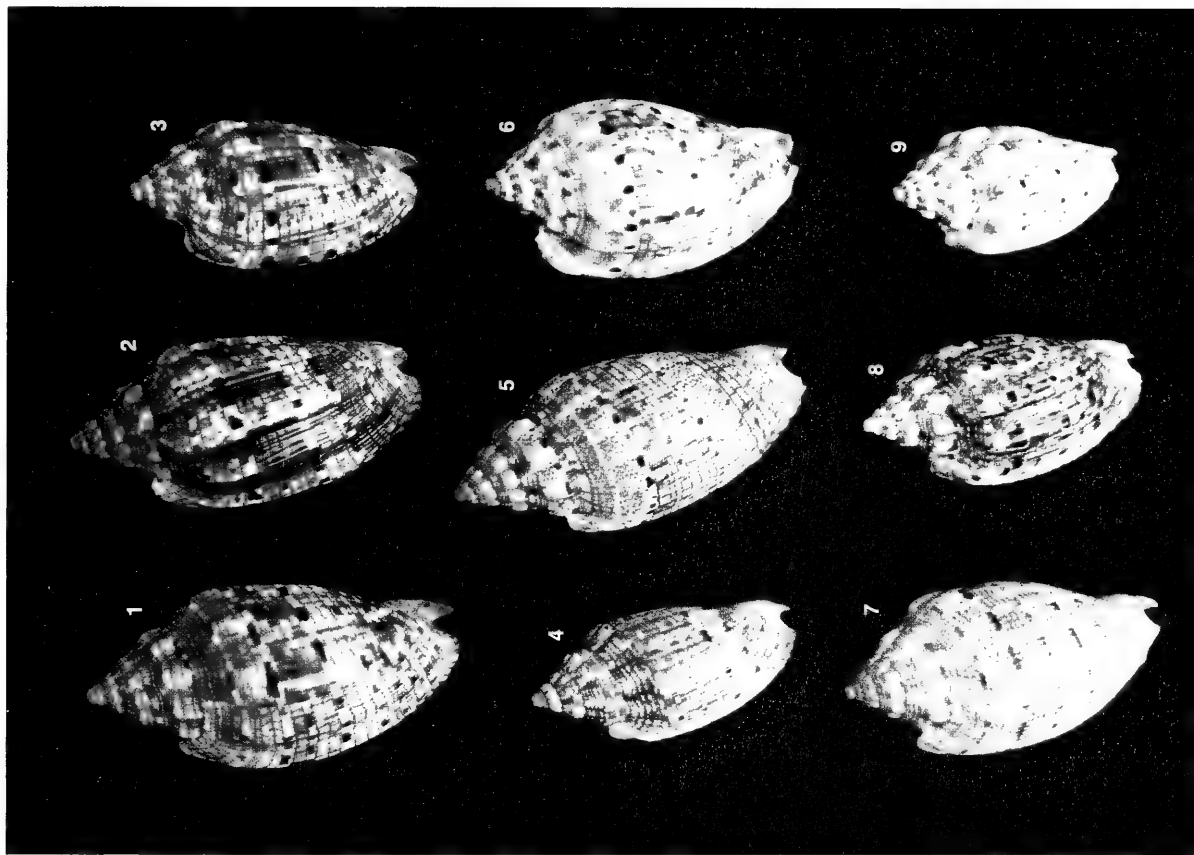


Plate V: *Voluta kotorai*: 1-2) Corn Islands, Nicaragua 3) Banks off San Andres, Colombia 4) Heavily sculptured form, locality unknown 5-9) Unusual forms from unknown localities.

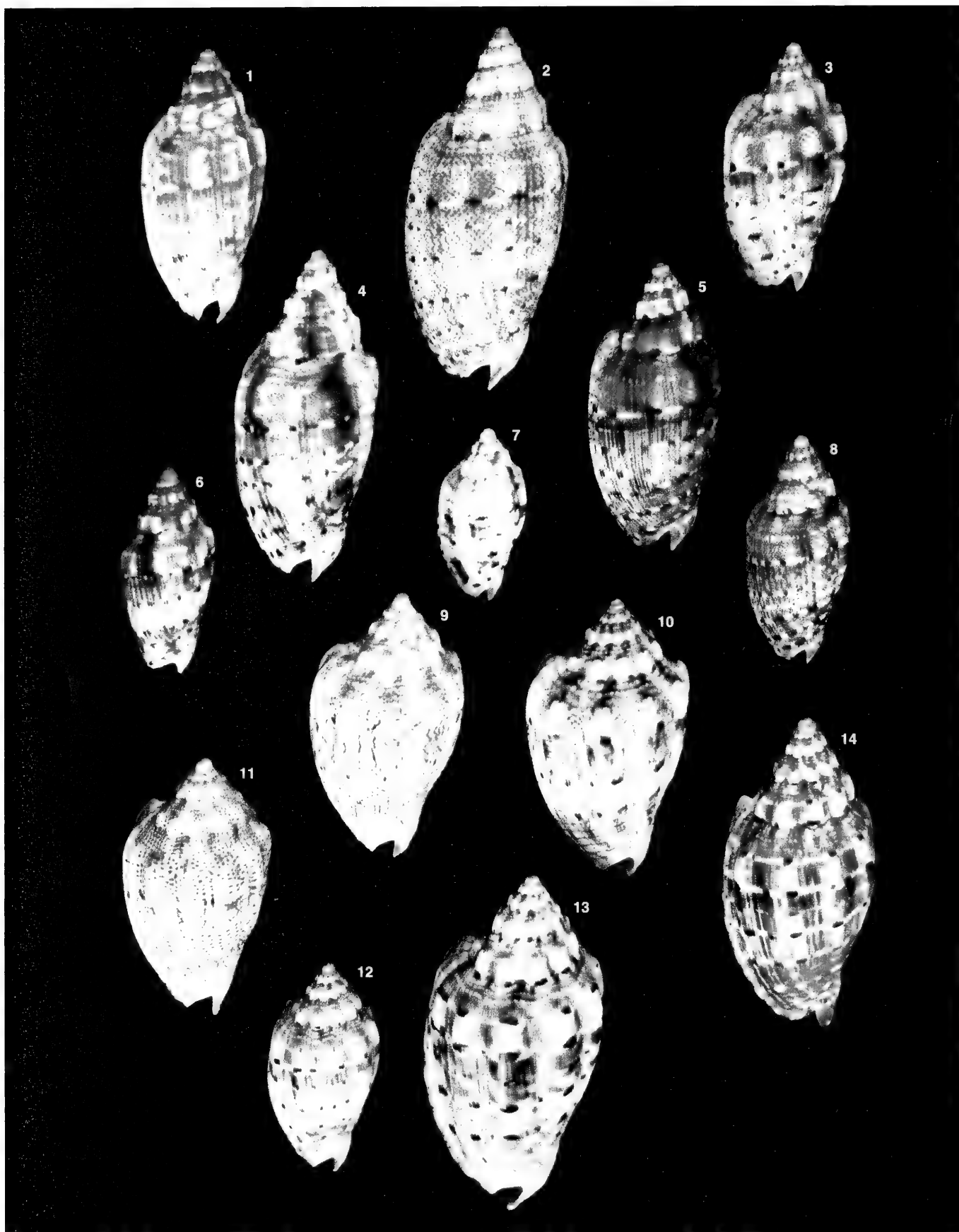


Plate V: 1-8 *Voluta morrisoni* 1) Rosalind Bank 2) Locality unknown (73.5mm) 3) Wide form, locality unknown 4) Cayos Miskito 5) Rosalind Bank 6) This specimen was the paratype of *V. morrisoni*, then was changed to the paratype of *V. harasewychi*. Locality unknown 7) "White" form, locality unknown (36.5mm adult) 8) Rosalind Bank 9) cf. *V. sunderlandi*, San Andres Is., Colombia 10) cf. *V. sunderlandi*, Cayos Cochinos 11) *V. sunderlandi*, Utila 12-14) *V. retimirabilis* 12) Locality unknown 13-14) Misteriosa Banks.

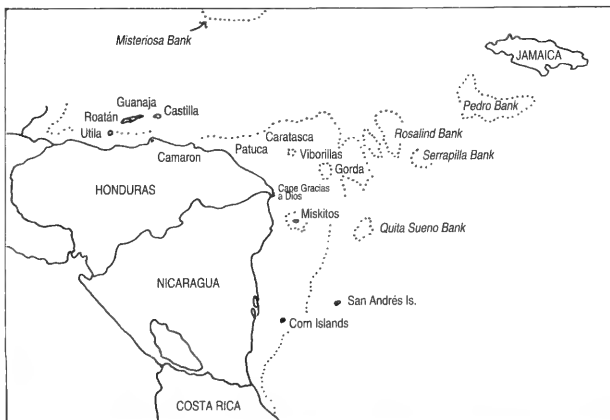
THE GENUS *VOLUTA* IN THE CARIBBEAN (Continued from page 12)

publications as such, but the "true" (?) *retemirabilis* (Pl. VI, 12-14), is very distinct, with an extremely intricate pattern of dots that does justice to the name. I have obtained several forms of this form (!!!) but, unfortunately, without reliable data. Most specimens I have seen in publications or sold as "*retemirabilis*" are a form of *hilli* with a much larger net pattern and collected around the same area as the more typical *hilli*.

Voluta demarcoi f. *hilli* (Petuch, 1987) can reach at least 108mm. It inhabits the banks around Caratasca, Gorda and Viborillas Keys and is so polymorphic that I have seen specimens in publication identified as "*retemirabilis*," "*kotorai*" and even "*harasewychi*." The more typical *hilli* comes from the Cayos Viborillas area. There are, however, much smaller specimens from unidentified areas, and specimens trawled around Caratasca are not as shouldered and have light-colored shells. I have great difficulty giving these a form name, so I call them deep-water *demarcoi*. The sea floor from this area is much more sandy than the coastal environment, and is probably the cause of the difference between them.

Voluta demarcoi f. *kotorai* (Petuch, 1981) is another striking form of *demarcoi*. Although the original type locality was given as Rosalind Bank, the earlier specimens I obtained with rather reliable data came from the environs of Islas del Maiz (Corn Islands), Nicaragua. In the last few years, however, I have also obtained a number of specimens said to have come from the banks off San Andres Island, Colombia. This area, although in Colombian waters, is not far from the Corn Islands (see map) and are a creditable range extension. They tend to be smaller in size, but perhaps more colorful than those from Nicaragua. Typical *kotorai* (Pl. V) do not have the bands of dots that several other forms have; instead, they have blotches of color in what has been called a "brick pattern" (Petuch, 1982). Some forms of *hilli* look rather similar.

An interesting form that comes from Utila Island is *Voluta demarcoi* f. *sunderlandi* (Petuch, 1987). It is interesting because just a few miles to the south typical *demarcoi* is commonly trawled by shrimpers, and no *Voluta demarcoi*, of any form, has reliably been collected in Roatan Island, just 12 miles to the east of Utila, or in Guanaja Island, east of Roatan (see map). Utila is on the continental shelf, while Roatan and Guanaja are not. Perhaps the complex has not managed to cross to those islands because of depth and currents. The form is particularly interesting because very similar forms seem to replicate under similar shallow, sandy conditions in Cayos Cochinos, just off the Honduras coast and very near Roatan and Utila, and in San Andres Island, several hundred miles away. These similar forms are collected by SCUBA or snorkeling in shallow water to about 30' near shore.



Based on conchological characteristics alone, *Voluta morrisoni* Petuch, 1980 may be a valid species. Although it can readily be picked out of any series of the complex by its shape and coloration, this can be done with typical forms of other taxa from the *demarcoi* complex. It can be distinguished from all others, however, by its beaded columellar plaits. This reliable trait appears in all of the forms of the species that I have in my collection. The type locality is "off the north coast of Roatan Island" but, once again, because these early specimens passed through several hands before they reached us, the locality is incorrect. Until recently, all of the specimens I had obtained with reliable data came from Rosalind Bank. I have confirmed this, but in the last couple of years I have obtained specimens said to have come from Cayos Miskitos, Nicaragua, and from the Honduras-Nicaragua border. Should these additional localities be true, it would support the concept that *morrisoni* is a true species and not a population variant. My sources agree that the species lives in large expanses of very clean, granular sand.

Much less controversial is *Voluta virescens* Lightfoot, 1786, which inhabits most of the western and southern Caribbean. The northernmost limit seems to be Belize, from where I obtained two dwarf adult specimens, the smallest measuring 34mm (Pl. III, 3). Small, drab-colored specimens, very close to the form *lacertina* Petuch, 1990 are trawled in Honduras waters (Pl. III, 7); and the species is trawled in large numbers in Nicaraguan waters, where it reaches a much larger size. For some reason, although Honduras specimens come up in the trawls with typical *V. demarcoi*, trawlers coming from Nicaragua and working at about the same depths bring only *virescens*.

Presumably the species continues through Costa Rica, since it is also found in Panama. The names *lindae* Petuch, 1987 and *lacertina* Petuch, 1990 have been given to populations from this country. The largest specimens of *virescens* come from Colombia, where they reach at least 114mm in size. Although I am not aware of specimens trawled off the Venezuelan coast, the easternmost limit for the species seems to be Margarita Island, eastern Venezuela, where Kevan Sunderland has found them while SCUBA diving (personal communication).

Voluta virescens seems to prefer the muddy bottoms of coastal areas. Unusually colored specimens have been collected in sandier environments. Although a much more conservative species in general appearance, it may be monochromatic, either albinistic or yellowish; may have darker bands of solid color; may have dots over its whole surface or have them in a band pattern; and may have brown, yellow, or translucent-white protoconchs, even when the specimens themselves are not albinistic. The Nicaraguan population exhibits most of these variations (Pl. III, 8-10). The shape of *virescens* is rather stable but some populations, particularly those from Panama (Pl. III, 1), can take the shape of the wider varieties of *musica*.

135 Oak Crest Drive, Lafayette, LA 70503

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COA '93 — A WEEK ON PANAMA CITY BEACH

by Barbara Elliott

Secretary, Conchologists of America

The COA has come of age! Approximately 310 kindred spirits gathered at the Edgewater Beach Resort in Panama City Beach, Florida, beginning July 11 to celebrate COA's 21st year and to enjoy a week of hospitality *a la* Jim and Linda Brunner and the other members of the Gulf Coast Shell Club.

The Convention Center was handily located in the midst of the lovely and spacious condominiums in which we were housed. It was easy to walk to, although there was ample parking space provided. The early registrants on Sunday hurried to the Convention center to take advantage of the fifty cent bargain table put together and managed by Sol Weiss. There was some serious bargain hunting going on there.

The Monday evening Welcome Party was the place to meet and greet old and new friends. Shell attire was the chosen dress. There was a contest for the prettiest (Joan Skoglund), the loudest (Ben and Josy Wiener), the most original (Linda Koestel) and the funniest (Richie Marini). Convention Photographer Steve Barry took everyone's photo as souvenirs of the event.

The week was chock full of programs and field trips. There was truly something for everyone. Daily early morning field trips catered to the desires of the waders, snorkelers, fossilers, canoers, and divers. Some great treasures were found and displayed each day. There were awards for the "find of the day" as well as the "find of the week" and "find of the convention." Betty Hamann of Delray Beach, Florida won the "Find of the Convention."

I am sure there were many interesting and funny anecdotes arising out of those field trips. There are two I heard about. Joan Skoglund, of the North Alabama Shell Club, was ecstatic when she found her first live scallop. As she was admiring it, the creature spat at her. Then it smiled at her with its blue eyes. Well, that did it! She was simply unable to resist those baby blues and she returned her first live scallop to its habitat.

On Friday, Ann McElroy and guest, Carole James, went to the wading site near Tyndall Air Force Base where the waders had shelled earlier in the week. The water was rough and dirty, so they walked down the beach to calmer, cleaner water. Suddenly they saw a boat heading straight toward them. The gals heard an announcement over a loudspeaker, "You are in the middle of a missile site area. We will be launching a missile shortly. You must leave the area immediately. Raise your hand if you understand." I do not know if they raised a hand, but they certainly raised their feet. So much for a private wading trip!

For those who elected to bypass the field trips, there were workshop programs covering a wide variety of topics including shell craft (a first for COA), underwater photography, life in the Seychelles, how to read shell books, shelling underwater in Hawaii, endangered freshwater mollusks of Alabama, and even Walter Sage's famed shell fabric. The only complaint that I heard about these sessions was that they were limited to 30 minutes. Que Alldredge served as floor manager for the convention. He did a great job of steering us all in the right direction.

The auction on Wednesday evening featured over 100 interesting items which brought over \$4,400 in to the COA treasury to benefit our Grants and Scholarships program. Auctioneers Al Deynzer, Dave Green, and Jim Brunner kept the action lively and the bids coming.

Between Monday and Wednesday, there were 14 wonderful programs presented by 14 of our knowledgeable and talented members. I cannot possibly describe them all. We learned, we laughed, and we were thoroughly entertained by subjects ranging from local shells of the Florida Panhandle, to the Red Sea, South America, freshwater shells, fossils, land shells, underwater shelling, rarities, what shells eat, new species, reproduction, classification, the early taxonomists, and so on. The programs were quite varied and all were most interesting.

Tuesday afternoon, after the last shell program of the day, the COA Annual Meeting was held. Officers were elected, with Doris Underwood returning as President, Linda Koestel as Vice-President, Barbara Elliott as Secretary, Walter Sage as Treasurer, and Horatio Buck replacing the retiring Herb Young as Trustee. (Lucy Clampit, the other Trustee, has another year of her two-year term to serve.) The Board of Directors for 1993-94 had only one change also: Lucille Green replaces Vivienne Smith as COA Historian. The 1993-94 Nominating Committee will be composed of Alan Gettleman, Chairman, Dave Green and Betty Jean Piech.

A change to the By-Laws was also voted in. A Section D was added: "In the event the immediate Past President is unable or declines to serve on the Executive Committee, the next preceding Past President available will fill the position." This change was put into effect immediately, as Past President Glen Deuel wished to retire. 1991-92 Past President Hank Foglino replaced him as the next preceding Past President available. Hank is also serving the Board of Directors currently as Properties Chairman.

The long-awaited bourse featured 27 dealers offering their



Your Hard-Working Board of Directors doing their thing: From left: Hank Foglino, Lucy Clampit, the top of Tucker Abbott's head and Walter Sage's eyes, Doris Underwood, John Baker, Linda Koestel, Bobbie Houchin, Al Chadwick, Herb Young's arms, Lynn Scheu, Larry Stiles, Don Dan, Barbara Elliott, Betty Lipe, Vivienne Smith's name tag, Glen Deuel, Hank Foglino and Lucy Clampit. Uhh, Hank and Lucy, how'd you do that?

jewels of the land and sea. This is our unique, once-a-year opportunity to shop in this manner with so many quality dealers represented. I know one individual, attending her first COA Convention, who had to mail two boxes of clothes home so that she could carry all of her precious shells on the plane with her. At the airport x-ray machine, the attendant was heard to comment, "Do you know anyone who would individually wrap all those shells?"

Our banquet was a fitting finale to an exciting week. The meal was delicious and well served. Dr. Rudy Bieler, of Chicago's Field Museum of Natural History, was the featured speaker. He enlightened us with "A Farewell to Prosobranchs," describing his work with the snails and their classification as prosobranchs. His work on the subject is scheduled to be published in the near future.

A dedicated Ben Wiener spent a good part of the week sitting at a table in the lobby of the convention center selling raffle tickets. He has become very adept at this task. The three raffle items were awarded at the end of the banquet. *Chicoreus spectrum*, donated by Jose and Marcus Coltro, was won by some lucky person whose name continues to elude us. Was it you? Let us know. The *Pterotrochus teramachii*, donated by Donald Dan, went to Jerry Clampit. And Lynn Scheu was the lucky winner of the original art work drawn and donated by artist, Mathilde Duffy.

If you have never attended a COA convention, you do not know what you are missing! It is always exciting for me to arrive at the convention to see who is going to be there. Many of these folks are good friends I have made at previous conventions, and whom I look forward to seeing annually at convention time. Then, there are those people who perhaps have attended only one convention and whom I still look for each year, hoping to renew our friendship. A first-timer need not be afraid of feeling alone or left out while attending a COA convention. The camaraderie is warm and open. No cliquish group, these conchologists and malacologists! If you have never attended a convention, please think seriously about Corpus Christi, scheduled for July 17-23, 1994, at the Marriott Bayfront Hotel. COA and the Coastal Bend Shell Club will be waiting to greet you!



Browsing at the Bargain table: Doris Underwood and the Schneiders.

Because you'll hear all the details about the great 1994 Convention in Corpus Christi right away.



Ruth and Que Alldredge, Convention Floor Managers, show off the 1993 COA T-Shirt, designed by Sharon Snyder.



Most of our wonderful Gulf Coast Shell Club Convention Committee — Back: Steve Barry, Jim Brunner, Bob Granda, William Franklin, Al Johnson; middle: Reta Melvin, Gerald Lowther, Kathy Chapman, Tammie Corbin, Sara Franklin; front: Linda Brunner, Sue Johnson.

Tucker Abbott tells Steve Barry about the one that got away.



This Issue's Contest: Find the convention photo that Convention Photographer Steve Barry didn't take. Send your answer to the Editor. First correct answer wins Walter Sage's hard hat, provided we can find out what became of it.

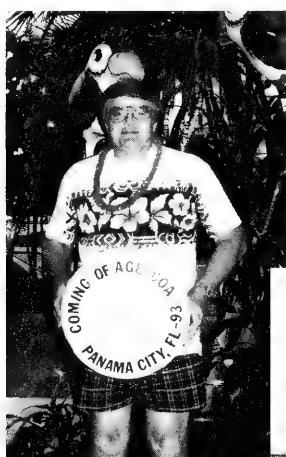
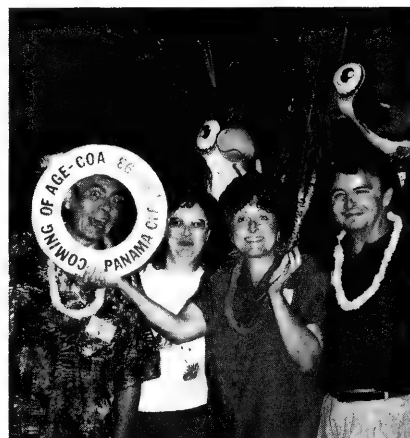


Ben Wiener packs 'em in: Larry Stiles and John Baker buying tickets for the raffle, Bud Rogers signing his sure winners.



Around the bar at the Welcome Party.

The Welcome party photo nobody claimed.



Welcome Party Chairperson: Mary Schelling, a.k.a. Chiquita Banana.

Memorable moments.



Alan Gettleman puts too much on his plate at the Coltros' table at the Bourse.



Dr. Rudiger Bieler, our esteemed Banquet Speaker.



It's just as well you can't see this photo of Walter Sage in color! (That's Barbara Elliott shielding her eyes from the glare.)

Buying at the Bourse: Ann Buddenhagen checks her want list as Meg Goldberg writes up an order.



They're off and running as the Bourse opens Thursday afternoon.



Buy your very own guaranteed "Shell of the Show"!



Bidding at the Silent Auction Table are Sherlee Palladino, Ed Se Gall and Eleanor Hillman.

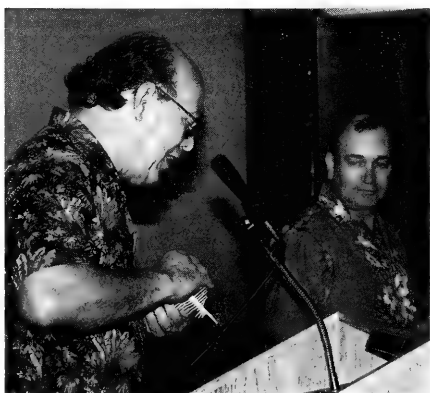


Winner of the "Find of the Day - Dive Division", Wayne Harland accepts the Hat Award from Convention Co-Chair Jim Brunner.



Linda Brunner, Convention Co-Chair, presents Betty Hamann with her award for the "Find of the Convention" while the runners-up look on.

Because we hate to mail dues reminders.



Co-Auctioneer Dave Green keeps an eye on Al Deynzer as he starts the bidding on Auction Item #1, a gem specimen of *Murex pecten*.

Victoria Punnett scans Larry Strange's Bourse table, while Kevan Sunderland buys some Indo-Pacific bivalves. Kathy Chapman is obviously describing the one she found on the morning Dive Trip.



Dr. Harry Lee's the way on the Freshwater Canoe and Wading Trip. Who's that scrambling for mussels in the foreground?

DONORS TO THE COA AUCTION 1993

Our sincere appreciation to all those who contriuted to the 1993 COA auctions, raffles, and door prizes. It is your generosity which makes possible the very successful COA Grant program. If you contributed and your name is not on the following list, please accept our apology for the omission.

Dr. R. Tucker Abbott
Ruth & Frank Abramson
Rosemary Adams
Alain Allary
Ruth Alldredge
John Baker
Barbara Barfield
Yvonne Bequet
Linda & Jim Brunner
Horatio Buck
Kathy Chapman
Edie & Chip Chippeaux
Jose & Marcus Coltro
Karen Couch
Dr. Bruce Crystal
Donald Dan
Henrikas Danila
Bev & Al Deynzer
Phyllis Diegel
Sylvia & Jake Dominey
Mathilde Duffy
Kay & Les Easland
Barbara Elliott
Sara Franklin
Alain Gaspard
Alan Gettleman
Marty Gill
Richard Goldberg
Bob Granda
Betty Hamann
Barbara & Ed Haviland
Brian Hayes

Judy Hensley
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Bea Sweet
Fran Thorpe
Doris Underwood
Hazel & Allan Walker
Mary & Sol Weiss
Josy & Ben Wiener
Donald Young



1994 GRANT RECIPIENTS ANNOUNCED

Each year, COA awards grants and scholarships to a number of deserving students and workers in malacology. This year, eight recipients were selected to receive a total of \$6,000, the highest amount ever awarded in COA history. (The success of the 1992 Auction made this possible.)

Consideration was given to the following factors, in addition to the quality of the project and the reasonableness of the applicant's budget: Was the applicant working toward a degree (MS or Ph.D.)? Had the applicant already received aid from another granting organization? The Grants Committee, composed of Tucker Abbott (Chairman), Hank Chaney and Walter Sage, also attempted to balance the recipients according to geographical location, and according to their interests. The recipients are:

David H. Bachus, Seattle, Washington — \$750; "The paleoecology of *Buchia* (Pectinacea)."

Dr. Melbourne R. Carriker, Lewes, Delaware — \$500; Biology of the Hard Clam, *Mercenaria mercenaria*."

Dr. Thomas J. DeVries, Burton, Washington — \$1,000; "Neogene mollusks of the Peruvian Province: The Chilean Connection."

Margaret Harvey, Tallahassee, Florida — \$500; "Reproductive System of the bivalve, *Carditamera floridana*." (Ms. Harvey gave a very interesting presentation at the convention in Panama City on the subject.)

Bruce S. Lieberman, New York, New York — \$750; "The effects of environmental and geographic changes on phylogenetic and biogeographic patterns in molluscan taxa."

Dr. John Stimson, Honolulu, Hawaii — \$500; "Predators as potential factors limiting populations of the coral-eating nudibranch, *Phestilla sibogae*."

Dr. Richard A. Tankersley, Spokane, Washington — \$1,500; "Endoscopic analysis of the ctenidia and suspension feeding dynamics of three Northwest American freshwater bivalves." This fascinating study uses the medical tool, the endoscope, for looking inside living freshwater clams and observing the digestive process.

Frank Thomas, Honolulu, Hawaii — \$500; "Optimal foraging and conservation: ethnoarchaeology of molluscan ecology and human exploitation on Abemama Atoll, Kiribati" (Gilbert Islands)



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OUR COA CLUBS — A CLOSER LOOK

by Nancy Gilfillan

New York Shell Club

In the fall of 1948, after a summer spent on the beaches of Connecticut, Dr. Walter Jacobs found various common shells a challenge to his knowledge of natural history. Library books did not help much. His next call was to the American Museum of Natural History, which sent him to the American Malacological Union, which advised that he get in touch with a local shell enthusiast, Morris K. Jacobson. Dr. Jacobs did contact Mr. Jacobson, they discussed interest in shells, and they made an appointment to meet one evening in Grand Central Station, near the information booth. They would be easily recognizable to each other because they would each be carrying an identifiable object — not the usual red carnation, but a shell, of course!

The two men decided to obtain a meeting place at the American Museum and to post notices at local college science departments and any other places that might reach shell people. Two meetings of those interested were held at the Museum in January and February of 1949, and the New York Shell Club was born.

Today the club still meets at the American Museum of Natural History, Central Park West at 79th Street, New York City, on the second Sunday of each month, September through June, at 2:00 p.m. in Room 319. To enter the Museum without paying a fee on meeting days, present your New York Shell Club membership card at the door. It should also be mentioned that parking at the Museum on a Sunday is horrendous, so plan to use alternate transportation. At times club members meet for lunch at the American Museum Restaurant at 12:00 noon. To be sure that meeting days, places, times, and room numbers have not been changed, call President Al Scarpetti at (212) 929-7430. And if you're interested in auctions, the club's May meeting is a "must" for you. Again, call Al for the location and time of their auction.

The New York Shell Club boasts some 170 members. One of them, Nick Katsaras (the club's historian) is now 84 years young and he has NEVER missed a meeting (including two which have

been cancelled!) from mid-1949 to the present. This span of 44 years-and-still-counting is certainly a record worth mentioning!

The club's members have varied interests, and they range from professional conchologists, shell dealers, and experienced and novice collectors to beachcombers, divers and one (our COA Treasurer) who is fervently collecting, not shells, but shell shirts and shell fabrics. This is just as hard work as shell collecting — he is out at "low tide" (when the stores open), he stays until "high tide" (when the stores close), he can be found mucking about old country lanes in all kinds of weather, searching for that newest and elusive shell pattern, and he faithfully follows the rules of conservation by putting back where he found them the shell fabrics and shirts he has unearthed from drawers and racks.

The club publishes a quarterly newsletter called **New York Shell Club Notes**. The masthead, as well as the club's pin, carries the club logo, *Busycon canaliculatum* (Linne, 1758). To receive this publication free, join the club; dues, payable in September, are \$9.00 single, \$11.00 family, \$7.00 corresponding, and \$9.00 overseas, paid in U.S. currency.

Over its history, the club has participated in several field trips, mostly to the tip of Long Island. Its members have also made several trips to DuPont's Delaware Museum of Natural History, which not only has a fine shell collection in its stacks, but also has an exceptionally fine shell exhibit for the public's enjoyment.

The club raises money mainly by its yearly auction. They are fortunate to have been able to take in between \$2,000 and \$3,000 each year, which in turn goes to a donation to the American Museum of Natural History, covers club expenses, and also goes toward some scholarships.

The New York Shell Club would be delighted to welcome each of you to one of its meetings; if you're in New York City and wish to spend a lovely Sunday afternoon talking shells, do drop by and meet some nice people.

in ocean currents, shoaling, etc. might have sufficed in producing such barriers — a land bridge need not have been present on each occasion (and probably wasn't). The use of mitochondrial DNA (molecular clocks) is especially helpful in the temporal analysis, which, in agreement with other lines of evidence, places the final closure of the Isthmus (cessation of gene flow) at about 3,000,000 years. This event seems to be temporally quite separate from the mass extinctions discussed above (about 1,300,000 years later). As Vermeij points out, the figure of 3,000,000 years, widely used as a stop-watch setting for molecular evolutionists dealing with this element of the New World fauna, must be applied with caution based on the findings of this study.

Science has brought us revolutionary news; that's its mission as the leading weekly in the field. C.O.A. conventioners will recognize the names of the 1992 contributors (Warren Allmon, Roger Portell, Gary Rosenberg) among the luminaries reporting their research. Any reader, and I recommend you be one, will sense that the bases for this kind of fine work **are good collections** — careful, arduous, and well-curated. They are the underpinnings of work of this calibre. Conchology is important! Now it has ascended to the vanguard of **Science**. —Harry. G. Lee



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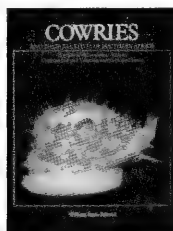
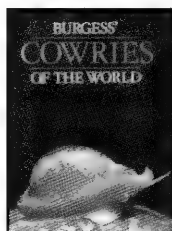
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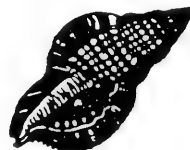
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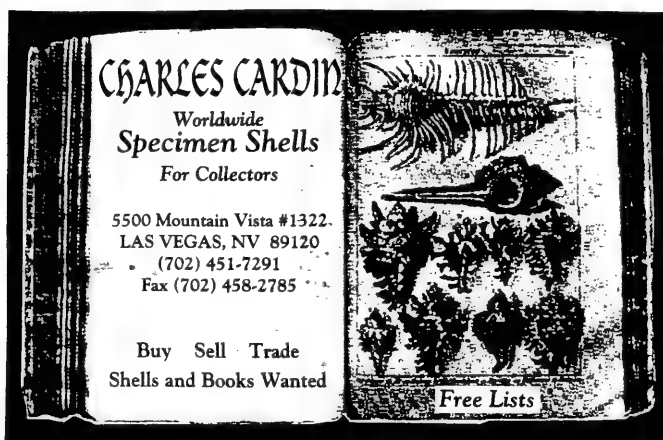


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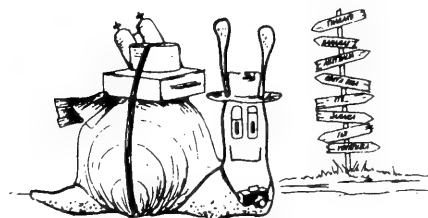
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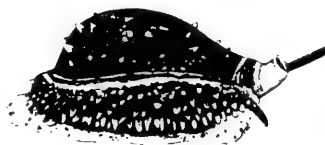
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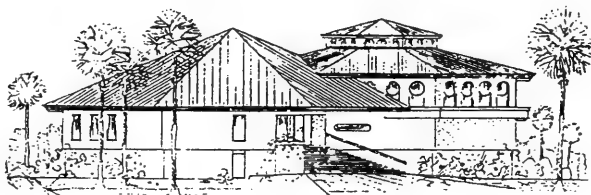


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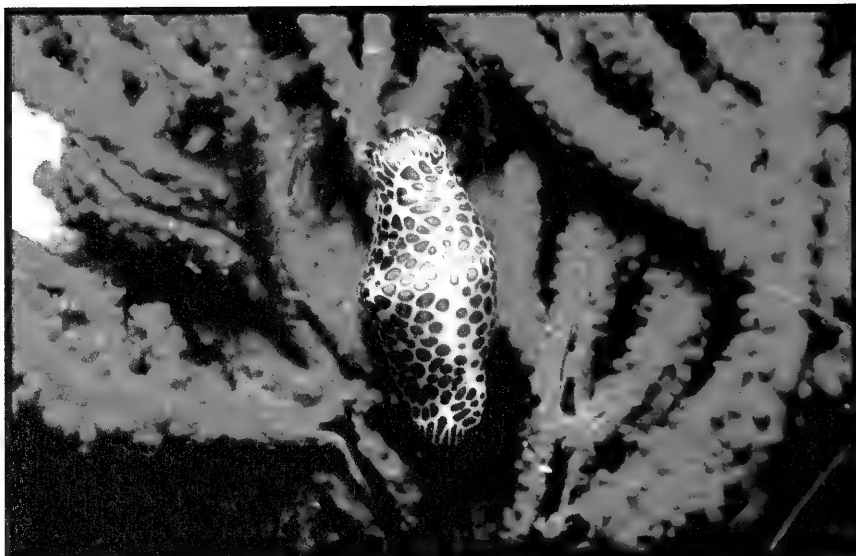
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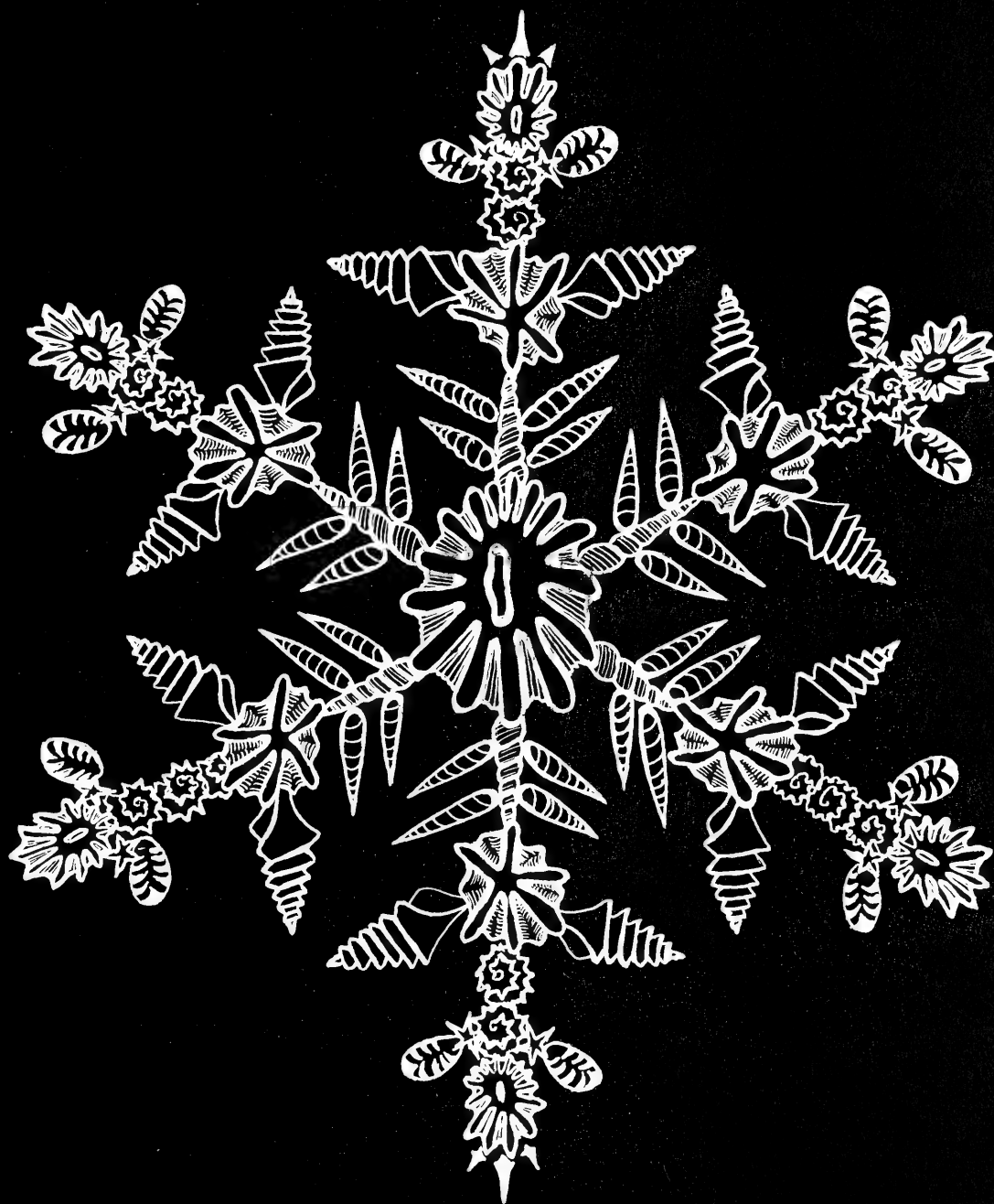
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CORAL DWELLERS



Photographer Steven F. Barry of Panama City took these pictures of several specimens of *Cyphoma mcgintyi* at the St. Andrews State Park in Panama City, Florida. The animals were found on gorgonian corals in 35'. Note that the animal in the second photo appears to be laying eggs, the translucent whitish round bodies on the gorgonian below and behind the animal.





M. Duffy '93

AMERICAN CONCHOLOGIST

QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 21, NO. 4

DECEMBER 1993



In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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COVER:

Mathilde Duffy puts us in the holiday mood with her pen-and-ink snowflake, formed from terebras and turritellas, star shells, turrids and Mathilde's personal favorites, limpets.

COA '94

The Texas Connection — July 17-23, 1994

As the song says, "The stars at night are big and bright, deep in the heart of Texas...." Come and see them for yourself when the Coastal Bend Shell Club and its Texas Connection host the 22nd annual COA Convention in Corpus Christi.

Convention dates are July 17-23. Circle these dates on your calendar and COME ON DOWN to the beautiful Marriott Bayfront Hotel on Corpus Christi Bay. The hotel, located on Shoreline Drive across from the marina, provides a breathtaking view of the water from each of its 474 guest rooms.



The Glass Pavilion Restaurant and High Tide Comedy Club adjoin the convention area. An indoor/outdoor pool, fully equipped health club, whirlpool, saunas, racquetball courts (nominal fee) and golf driving area are also available. Meeting facilities are superb. Bourse participants can look forward to 10,000 square feet of space in the hotel's Corpus Christi Ballroom. Programs featuring some of your favorite speakers (plus Texans who will tell you "What's Going On in Our Side of the Gulf") will be held in the adjacent Nueces Ballroom.

And how about doing some cool bidding on a hot afternoon? This year's Auction will begin after lunch on Wednesday. Chairmen Dave and Lucille Green and Jerry and Lucy Clampit promise a TEXAS SIZE Auction to benefit the COA Grants and Scholarships Program. At its close, plan to celebrate with friends at one of the restaurants listed in your welcome pack.

Members of the Coastal Bend Shell Club, which celebrated its 35th year in 1993, are enjoying the camaraderie generated by "The Texas Connection" as they meet with members of other Texas clubs to work on decorations and plan events. Our goal is to extend true "Texas hospitality" with a fiesta and barbeque included among the events.

Corpus Christi has numerous attractions which will be offered as optional trips. These include a sunset cruise on the bay, tours of the Texas State Aquarium and Corpus Christi Museum of Science and History, and a post-convention excursion to the Padre Island National Seashore on Saturday.

Why not plan your summer vacation around COA's Convention dates?

Rich Goldberg's address and phone number were incorrect in his ad on page 23 in the September issue. No, Rich has not gone back to New York. Yes, he is still in Maryland, and is still a happy newlywed. (How long does this "newlywed" business last, anyway, Meg and Rich?) The correct address and phone number are:

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THE WORLD-WIDE GENUS *CHICOREUS*

by Sue Stephens

Part I of Sue's article on the *Chicoreus* was written in December 1991 as graphics and text for her exhibit of the same name for the 1992 Winter and Spring shell show season. As such, it won the COA, Du Pont and Masters Trophies. This extremely useful synopsis of the genus was originally published in July 1992 in the Sanibel-Captiva Shell Club, Inc. *Junonia*. Sue has since added Part II as an update following the late 1992 appearance of Roland Houart's *The genus Chicoreus and related genera (Gastropoda: Muricidae) in the Indo-West Pacific*.

Family **MURICIDAE** Rafinesque, 1815

Subfamily **MURICINAE** Rafinesque, 1815

Genus **CHICOREUS** Montfort, 1810

Subgenus *Chicoreus* (sensu stricto)

Subgenus *Chicoreus* (*Phyllonotus*)

Swainson, 1833

Subgenus *Chicoreus* (*Siratus*) Jousseaume, 1880

Subgenus *Chicoreus* (*Naquetia*)

Jousseaume, 1880

Subgenus *Chicoreus* (*Chicomurex*)

Arakawa, 1964

Note: s.s. = sensu stricto: in the strict sense

s.l. = sensu lato: in the broad sense

Part 1

Chicoreus sensu stricto is the largest single group in the subfamily Muricinae, and its distribution is largely Indo-Pacific. Add to that group the four subgenera, *Phyllonotus*, *Siratus*, *Naquetia* and *Chicomurex*, and it becomes apparent that the distribution is world-wide in the tropical, sub-tropical and temperate zones.

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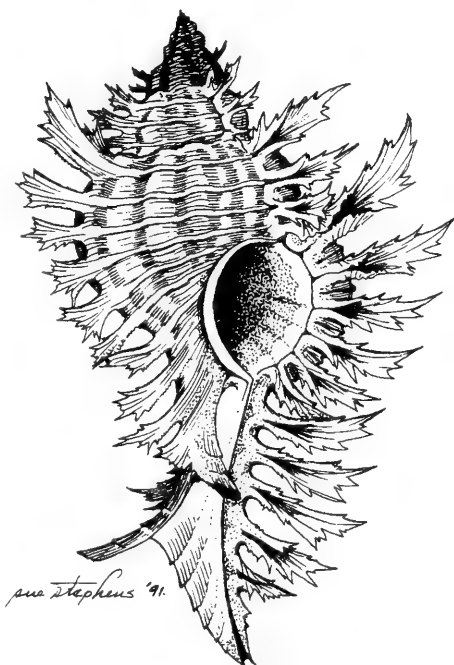
Chicoreus s.s. is sub-tropical, living in shallow water with other members of their species generally in depths of 50 feet, with a non-rocky bottom preferred. Some species live in mangrove swamps and are carnivorous. The type species is *Murex ramosus* Linnaeus, 1758. This genus usually, though not always, has 3 foliaceous, regularly aligned varices and a marked anal notch. The elaborate frondose varices are the obvious and typical hallmark of the genus. Strangely, this *Chicoreus* group did not pass from the western Atlantic through the Isthmian channel which was open at various times in Panama although other members of the Muricidae made the transition.

Two subgenera of *Chicoreus* seem to be endemic western Atlantic forms, and in these groups, *Chicoreus* (*Phyllonotus*) and *Chicoreus* (*Siratus*) there are numerous species.

On the west coast of the Americas, the *C.* (*Phyllonotus*) (type species: *Murex margaritensis* Abbott, 1958) and the genus *Hexaplex* groups are dominant to the exclusion of any *Chicoreus* s.s. species. Characteristics which unite the species of *Phyllonotus* are the irregular placement of varices with respect to each other, and irregular number of varices per whorl, and the varical ornamentation being limited to no more than short open spines, or often being completely lacking. There is also a tendency to have brown and white spiral color bands, pink apertures and flaring parietal shields.

The *Phyllonotus* group are sub-tropical shallow-water dwellers and are active predators and scavengers. This group is confined to the New World where there are 8 species. In the western Atlantic the 4 species are *pomum*, *globosus*, *margaritensis* and *oculatus*. In the eastern Pacific, the other 4 are *erythrostomus*, *eversoni*, *peratus* and *regius*. Originating in the western Atlantic, *Phyllonotus* migrated through the Isthmian passage, probably in late Miocene

(Continued on next page)



Chicoreus (Chicoreus) florifer (A.Adams, 1855)



Chicoreus (Siratus) beauii (Fischer and Bernardi, 1857)

THE WORLD-WIDE GENUS *CHICOREUS* (Continued from previous page)

time, and evolved into the 4 species now known in the eastern Pacific (Panamic Province). This subgenus is, and always has been, confined to the New World.

The subgenus *Siratus* (type species: *Murex senegalensis* Gmelin, 1791), also a New World group, has as distinguishing characteristics 3 varices per whorl, varices prominent with front-furrowed spines often joined by fimbriated webbing and a somewhat elongated and recurved canal.

The remaining 2 subgenera, *Naquetia* (type species: *Murex triqueter* Born, 1778) and *Chicomurex* (type species: *Murex superbus* Sowerby, 1889), are found in various other parts of the world, mainly Indo-Pacific, as is the bulk of *Chicoreus* s.s. *Naquetia* is characterized by 3 varices per whorl, an elevated, pointed spire, varices prominent with blunt spines on the body whorl, curled under and projecting only on the canal. The canal is about the length of the aperture and is recurved.

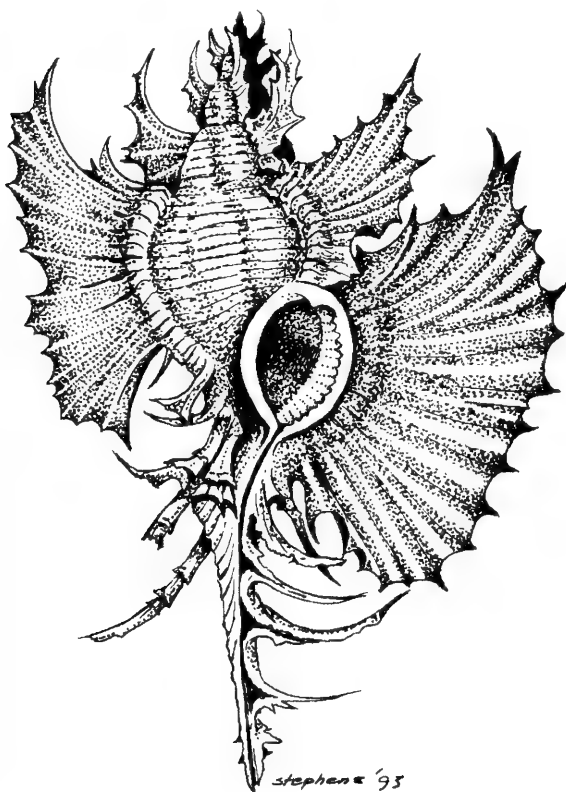
The separation of *Chicomurex* into its own subgenus was determined by Arakawa in 1964 based on radular differences. It is thought by some to be the Indo-Pacific equivalent of *Phyllonotus*. While the body whorl and spire are similar in these two subgenera, features which distinguish *Chicomurex* from *Phyllonotus* are longer siphonal canals and more open spinelets on the three varices.

Phylogenic and morphological studies of the Muricidae have led to a considerable shifting of species from one genus to another and even from one subfamily to another. Preoccupied species names which require changes, in addition to new names for previously named valid species are all greatly confusing to shell collectors. The problems of taxonomy (the placing of species in their proper genera) and nomenclature (the naming of a species) are, and will continue to be, on-going. Nomenclature is a purely legalistic study. The setting aside of one name for another, the

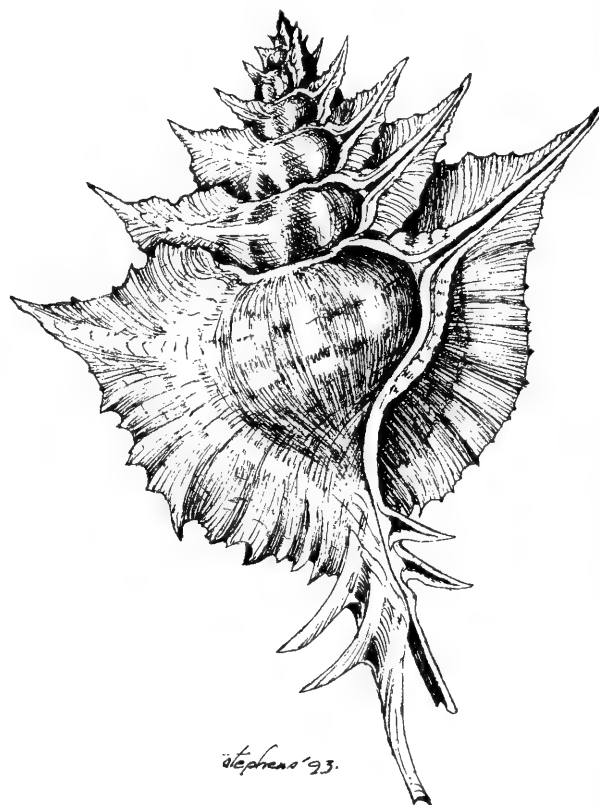
declaration of a species *dubium* (a doubtful species) or a *nomen oblitum* (a name to be discarded, not used) and other such decisions are in the province of the International Commission of Zoological Nomenclature (ICZN). So, when the name of your favorite genus is changed by them, this is not capricious at all. We must bear with these changes as additional studies prove their validity and necessity. Who knows but what in a year's time, or perhaps less, much of the above will need revision. It is ever thus!

Part II World-Wide Genus *Chicoreus*: A 1993 Update

Since my previous article (Part I) was originally written in 1991 (as the backboard graphics to go with a 20 case exhibit by the same name) there was a book, then in press, the contents of which I was aware, but could not use because it was as yet unpublished, which contained the many forthcoming generic changes within the genus *Chicoreus*. Six years in writing, it was finally published on October 20, 1992, **The genus *Chicoreus* and related genera (Gastropoda: Muricidae) in the Indo-West Pacific** by Roland Houart. Now it may be quoted to update the subgenera in this large and complicated genus. This is a very complex study and in my own case, if it had been available when I was preparing my exhibit, it would have saved me what will be hours and hours of correcting subgeneric assignments. Additionally — and conditionally — two species have been removed from *Chicoreus* (s.l.) and given their own new genera. For the time being I prefer to leave these two species where they are as subgenera; I'm not sure that time will bear out these reassignments. I knew what was going to happen when I wrote the second-to-last sentence of Part I; it hints of the work to come!



Chicoreus (Siratus) alabaster (Reeve, 1845)



Chicoreus (Chicopinnatus) orchidifloris (Shikama, 1973)

And there will be more. As the title of this new publication indicates, the changes therein apply only to the *Chicoreus* species of the Indo-West Pacific. To further complicate matters, the muricid fauna of the eastern Atlantic is currently under study and the species "tentatively included in the Genus *Chicoreus* (s.l.) will be revised." Hopefully, there will be no revisions of the western Atlantic relatives which I believe are all in *Chicoreus* (s.s. and s.l.).

Briefly, here is a "before-and-after" of the systematics of the Genus *Chicoreus*:

BEFORE HOUART

Genus *Chicoreus*
Montfort, 1810

Subgenus *C. (Chicoreus)*
Montfort, 1810
" *C. (Phyllonotus)*
Swainson, 1833
" *C. (Siratus)*
Jousseaume, 1880
" *C. (Naquetia)*
Jousseaume, 1880
" *C. (Chicomurex)*
Arakawa, 1964

AFTER HOUART (1992)

Genus *Chicoreus*
Montfort, 1810

Subgenus *C. (Chicoreus)*
Montfort, 1810
" *C. (Triplex)*
Perry, 1810
" *C. (Siratus)*
Jousseaume, 1880
" *C. (Rhizophorimurex)*
Oyama, 1950
" *C. (Chicopinnatus)*
Houart, 1982

To New Genera*

Genus *Naquetia* Jousseaume,
1880

Genus *Chicomurex* Arakawa,
1964

As you can see from the above, the first new subgenus is *C. (Triplex)*. This is very interesting because it leaves only seven species as *Chicoreus* (s.s.). They are: *C. asianus* Kuroda, *C. austromosus* Vokes, *C. bundharmaui* Houart, *C. cornucervi* (Roding), *C. litos* Vokes, *C. ramosus* (Linne [and is type species]) and *C. virgineus* (Roding). All other species which for years have been considered *Chicoreus* (s.s.) are now assigned to the subgenus *C. (Triplex)*.

Four species previously considered to be in the genus *Pteryonotus* have been reassigned to the subgenus *C. (Chicopinnatus)*: *damicornis* (Hedley), *guillei* (Houart), *laqueatus* (Sowerby) and *orchidifloris* (Shikama).

One lone species, *capucinus* (Lamarck), has a new subgenus all to itself: *C. (Rhizophorimurex)*.

In general, 64 species are recognized and assigned as follows:

<i>Chicoreus</i> (s.s.)	7
<i>Triplex</i>	39
<i>Siratus</i>	2
<i>Rhizophorimurex</i>	1
<i>Chicopinnatus</i>	3
<i>Naquetia</i>	5
<i>Chicomurex</i>	7

How's that for starters?! But don't take my word for it — as I said previously, this is a very complex, comprehensive work and in my opinion a necessity for any serious muricid collector. My best advice is to bite the bullet and buy the book!

*These are the 2 new generic assignments which I prefer for several reasons to leave as subgenera under the genus *Chicoreus* (s.l.).

Distribution of *Chicoreus* (s.s. and s.l.) by Provinces:

Caribbean Province: Centered in the West Indies, this tropical province extends north to the Florida Keys, the eastern coast of Central America, and as far south as Brazil.

Carolinian Province: From the south shore of Cape Cod to the northern half of Florida (Atlantic and Gulf of Mexico) and from NW Florida into Texas

Panamic Province: From the Gulf of California to northern Ecuador. (Since it was connected with the Caribbean in earlier geologic time, much of the fauna resembles that of the West Indies.

Indo-Pacific Province: The largest and richest shell region in the world, this province extends from the shores of East Africa eastward to the East Indies, Polynesia, the Hawaiian Islands and the northern half of Australia.

Mediterranean Province: This province extends from around Portugal to Southern France and along the NW coast of Africa, and encompasses the entire Mediterranean Sea.

Zealandic, South African & West African Provinces: These have contributions to *Chicoreus* but nowhere near as many as the five described provinces

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In Memoriam

Myrna Crissinger Caylor

Bernard A. Kinsey

Raymond Burr

ON THE REAL IDENTITY OF *MUREX DIPSACUS* BRODERIP, 1833 (GASTROPODA: MURICIDAE)

by Roland Houart

MUREX DIPSACUS. Mur. testâ fusiformi, multifariam varicosâ, varicibus subfrondentibus, transversim costatâ, quasi cancellatâ, albi fusco infusciatâ; spirâ productâ, canali mediocri: long. 1, lat. $\frac{1}{2}$ poll.

Hab. ad Sanctam Elenam.

From a rocky bottom at the depth of twelve fathoms.—W. J. B.

Original description of *Murex dipsacus* Broderip in Broderip & Sowerby (1833).

Recently I had the opportunity to obtain an unidentified specimen of *Murexsul* from northern Chile, which I was able to identify afterwards as the apparently very rare, or at least very rarely recorded, *Murexsul dipsacus* (Broderip, 1833), described from Ecuador. The shell, though it lacks an operculum, is undoubtedly live collected, and except for its first whorls, in very good condition. I take the opportunity of this paper to re-describe it and to give the synonymy of the species.

Murexsul dipsacus (Broderip, 1833)

Murex dipsacus Broderip in Broderip & Sowerby, 1833: 194.

Murex dipsacus —Sowerby, 1834: 8, pl. 60, fig. 20.

Murex dipsacus —Reeve, 1845: sp. 111.

Murex dipsacus —Tryon, 1880: 110, pl. 30, figs. 277 (only).

Murexiella dipsacus —Vokes, 1971: 42.

Murexiella dipsacus —Keen, 1971: 519, fig. 986 (syntypes BMNH)

Murexiella dipsacus —Fair, 1976: 37, text fig. 20 (from Reeve, 1845).

Murexiella dipsacus —I'achier, 1980: card 2501 (syntype BMNH).

Murexsul dipsacus —Vokes, 1984: 213, figs. 25a, b (syntype BMNH).

NOT *Murex dipsacus* —Tryon, 1880: fig. 281 (= *Murex octogonus* Quoy & Gaimard, 1833).

NOT *Murex dipsacus* —Smith, 1953: pl. 8, fig. 2 (= *Murex octogonus* Quoy & Gaimard, 1833).

NOT *Murexiella lappa* (Broderip, 1833) — Radwin & D'Attilio, 1976: 158.

DESCRIPTION

Shell medium-sized for the genus, up to 26.9mm in length (syntype BMNH), spinose. Spire high, with 6 shouldered, spinose, teleoconch whorls. Protoconch eroded. Suture impressed.

Axial sculpture of last teleoconch whorl consisting of 9 frondose or spinose, low varices. Other whorls with 9-11 varices. First whorls slightly eroded. Spiral sculpture of last whorl consisting of 5 primary cords, 1 secondary cord on shoulder, and numer-



Original illustration of *Murex dipsacus* Broderip, 1833.

20

ous, squamose threads between and on the primary cords. Spiral cords forming small apically-curved spinelets on varices, more apparent on shoulder.

Aperture roundly-ovate. Columellar lip smooth, rim adherent, briefly erect abapically. Anal notch obsolete. Outer lip slightly immature, smooth within.

Siphonal canal short, broad, straight, open, ornamented with frondose spiral cords.

Shell white and dark brown: spiral cords and threads on shoulder, abapical cord on last teleoconch whorl, and tip of siphonal canal white; other spiral cords brown; varices darker. aperture whitish.

TYPE LOCALITY

Ad Sanctam Elenam (= Santa Elena Bay, Ecuador).

TYPE MATERIAL

Two syntypes BMNH 1964437, respectively 18.9 and 26.9mm.

REMARKS

As seen in the synonymy, some authors have considered *Murex dipsacus* as a possible valid species of *Murexiella*. Nevertheless, Keen (1971), Fair (1976) and Kaicher (1980) considered it a variant, or southern form, of *Murexiella lappa* (Broderip, 1833). *M. dipsacus* was also synonymized with *Murexiella lappa* in Radwin & D'Attilio (1976: 158), probably due to lack of material. *M. dipsacus* has, to date, always been illustrated with only the help of the original figure of Sowerby (1834), or with photographs of the syntypes (BMNH). We may thus presume that it is rare and probably has not been recorded since its original description, or perhaps it has been misidentified. Vokes (1984) transferred the species to *Murexsul*.

To my knowledge, two authors (Tryon, 1880 and Smith, 1953) used the original illustration of *Murex peruvianus* Sowerby, 1841 (not Lamarck, 1816) to illustrate *M. dipsacus*. Tryon (1880: 110) and Keen (1971:519) synonymized *peruvianus* Sowerby with *M. dipsacus*. In fact, *M. peruvianus* is related to *M. dipsacus*, but is a synonym of *M. octogonus* Quoy & Gaimard, 1833, the type species of *Murexsul*, from New Zealand. The type material of *M. peruvianus* Sowerby, 1841 (not Lamarck, 1816) could not be located, but the original illustration shows a shell with more numerous and smaller spiral threads, and with longer spines than in *M. dipsacus*, and even though described as coming from Peru, it is almost surely a specimen of *M. octogonus*. *M. peruvianus* Sowerby was described from a specimen from the H. Cuming collection which is known for its numerous incorrect localities.

DISTRIBUTION

Keen (1971) and Fair (1976) include Peru in the distribution, probably based on the erroneous synonymization of *Murex peruvianus* Sowerby, 1841; nevertheless, that locality is probably correct because of the presence of the species in Chile. The actual geographic distribution is thus extended from Santa Elena Bay, Ecuador, to Arica, Chile.



Syntype of *Murex dipsacus* BMNH
1964437, 26.9mm.



Murexsul dipsacus (Broderip, 1833), Arica, Chile, under rock, 1 m., coll. R. Houart, 20.3mm.



Original illustration of *M. peruvianus* Sowerby, 1841.

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Walter Sage's Shell Collection, Or SHOPPING WITH WALTER

by Josy Wiener

Everyone who attends COA conventions is acquainted with Josy Wiener, doyenne of shell print fabrics. She and husband Ben are a familiar sight at any shell gathering, arrayed head to foot in matching shelly costumes, the products of Josy's clever fingers and imagination. But Josy recently met her match: Walter Sage is collecting shell print fabrics. And he brings to this new hobby the ingenuity, unflagging enthusiasm and talent for big numbers that has made him so successful as COA Treasurer. Cottons and rayons, silks and satins, gilt threads and border prints, all swell his collecting boxes. He even keeps a catalog and maintains a stock of duplicates for trade.

ACT I

It was the afternoon of the auction at the 1993 Suncoast Jamboree in Largo, Florida, Memorial Day Weekend. After we drooled over the outstanding shells to be auctioned off, Walter Sage and I went shell fabric shopping. It was the experience of a lifetime for me.

First it was off to Wal-Mart, where Walter knew in just what direction to go, just like a homing pigeon. Naturally he took first pick and I got the leftovers, if any material was indeed LEFT! Then off to JoAnn Fabrics, where he really went into a buying frenzy. He selected eight different patterns. He didn't take more



Walter has just surfaced after a deep dive into a fabric bin for one of his favorite pieces, a black cotton print adorned with blue, rose and gold gastropods of many species. (Josy Wiener photo)

because he already had all the others. I only bought three; Ben would kill me if I came back with more. While we were standing in line to pay for our purchases, heads craned to see what a man was doing with so much fabric.

ACT II

Six weeks later, at the Panama City Convention, by the time I arrived, Walter had already scouted all the fabric stores and outlets in Panama City and its suburbs, and had a long list of places to visit. Again, the only time we were able to pry ourselves loose from the festivities for shopping was the afternoon before the auction.

As before, I only bought three pieces, but I simply don't remember how much fabric Walter bought; perhaps it was beyond counting. You've heard of Madonna, the Material Girl? Well, meet Walter Sage, our Material Man.

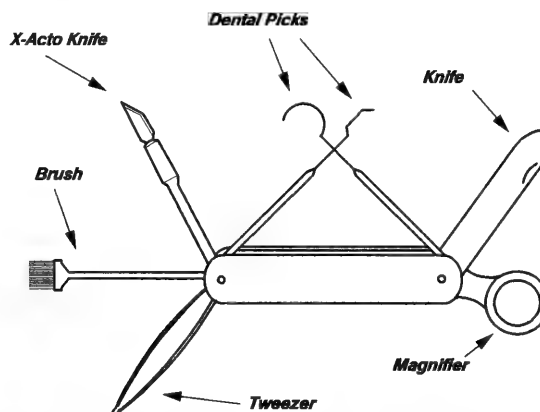
Walter's presentation at the convention was aptly titled "Material Things" and, believe me, it was an eye opener. He displayed and discussed over 500 pieces from his collection for us fabric aficionados to drool over and admire. It looked like a veritable fabric store. Walter remarked that he is to shell fabric what Imelda Marcos is to shoes.



A table exhibit of some of the rarer specimens from Walter's collection. Shades of blue predominate, but pinks and reds are common, and even an occasional specimen in black and white enlivens the display. (Josy Wiener photo)

SWISS ARMY SHELL CLEANING TOOL

John Caldeira, 1993
2117 Via Estrada
Carrollton, TX 75006



HOW TO READ THE TIDE CHARTS

by Peggy Williams

If you want to go shelling in shallow water in almost any part of the world, unless you are scuba diving or dredging, you should try to time your visit to coincide with the lowest tides. Even snorkeling is often easier at low tides, when more of the bottom is closer to your mask. How do you find out about the tides?

The U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) publishes books of tidal predictions around the world. There are four books, called "Tide Tables 19__": "East Coast of North and South America Including Greenland," "West Coast of North and South America Including the Hawaiian Islands," "Europe and West Coast of Africa (Including Mediterranean Sea)," and "Central and Western Pacific Ocean and Indian Ocean." The cost for these books is only about \$7-\$10, and they may be purchased from NOAA or from many marinas (and The Shell Store). They generally become available about September for the following year. They have predictions for an entire year, including high and low water times and heights and some other factors interesting to yachtsmen but not shellers, such as local time of sunrise and moonrise.

The bulk of each book is the Daily Tide Predictions. These are given for every day of the year for selected locations along the coast. A day's prediction looks like this:

15	0520	-1.0	-30
Th	1020	8.2	250
○	1630	-.07	-21
	2325	9.0	274

The "15" is the day of the month (each month has two columns) and "Th" is Thursday. If the day is full moon, an open circle will be under "Th"; new moon is a black circle; half moons are half-filled. You will notice that most very low tide cycles come at either full or new moons.

The next column is the time of day, expressed in a 24-hour clock and in Standard Time. If you are looking at summertime in Florida, you must convert to Daylight Savings Time by adding an hour to the time given.

The next two columns are the height of the tide, expressed in feet and centimeters. You can ignore the last column, centimeters. Look for a negative number in the feet column, as this indicates a lower than usual tide. In some areas, the lowest tides are only -0.2 or so, whereas other parts of the world have tides as low as -3.0. The actual difference between high and low tide is the total of the high and low (ex.: $-1.0 + 8.2 = 9.2$ feet total from high to low tide).

The low tide height is calculated by taking all the low tides of the year and figuring the "mean lower low water" (0). Tides higher than mean are expressed in positive numbers and lower than mean in negatives. The mean is the water depth shown on official charts, so mariners can see how deep the water will actually be at a given time. Shellers only need to know when the tide is lowest so we may take advantage of the largest exposed shelling area possible.

The Daily Tide Predictions will only give tides for those selected stations. To find tides for areas in between the stations, look at Table 2: Tidal Differences and Other Constants. There are several columns in Table 2. The only ones you really need to look

at are "Place" and "Differences in Time of Low Water." The Place may be one you are familiar with, but if not, the exact Latitude and Longitude are given in case you can figure it out. The Places (as the main stations) are arranged from north to south along the coast. In Florida there are numerous stations, arranged in FLORIDA, East Coast, Florida Keys, and Gulf Coast, including more than a page for the Florida Keys. Place Number 4013 is "Sarasota, Sarasota Bay." This is the one I use locally, though I'm not sure quite where in Sarasota Bay it refers to (I'm not too clear on Lat. & Long. myself!) but I think it's at the entrance of one of our passes. Therefore, I am aware that other areas in the Bay will be slightly different, depending upon how far from that pass they are.

The table shows that Sarasota Bay is figured against the Daily Predictions for St. Petersburg, beginning on p. 124 and that the difference in time for low water is -0 58 (subtract no hours and 58 minutes from the prediction for St. Petersburg). The difference for high water is not the same, but we don't care about that.

To find the time of the low tide for Sarasota Bay on Saturday, May 8, 1993, therefore, I would look first at Table 2 to find the difference (-0 58), then turn to the table for St. Petersburg. This shows that there will be a low tide of -0.3 (a good low for this area) at 2235 hours (10:35 p.m.). Subtracting 58 minutes, I find that low tide at Sarasota will be 2137 hours (9:37 p.m.). However, Daylight Savings Time will be in effect at that time, so I must add one hour, to make low tide at 10:37 p.m.

Now there are usually four tides per day in our area (and in most of the world), two highs and two lows, about 6 1/8 hours apart. However, due to the configuration of the Gulf of Mexico and the extra pull when the moon and sun are lined up in unusual positions, we sometimes have only two (or maybe one or three) tides per day. This is the case on May 8, 1993. The high tide for the day (at St. Petersburg, EST) is at 1416 and is 2.6 feet high, and the next day's high is at 1502 (2.5 feet). This means that the tide will fall 2.9 feet in a little less than 8 hours and will not be high again for about 17 hours, so it will probably stay pretty low for a long time. If I want to shell during the night for a long time, or if the tide were in the daytime, this would be an ideal shelling day — a weekend with a low tide that will last a long time.

If you are planning a vacation when you want to go shelling, it's a good idea to check the tides first, then choose your dates. The low tide cycles usually last about 5 days, then become indifferent, when the difference between high and low is very small (you can go inland then). Count on the low tide to be about 1/2 hour later each day. If you are going to an island area (the Bahamas, for example), be aware that the time of the tide may be very different on each side of the island and may be very different from the closest station you can find in the tide chart. Sometimes there are other publications that will give you more stations (like the Yachtsman's Guide to the Bahamas) or you can wait until you get there, note when the lowest tide occurs on the first day, and add half an hour for each day thereafter. But you can count on the lowest low to occur on the day predicted, and the depth of the low will be close to the chart.

Unless, that is, you have a high onshore wind, which can blow the tide in and keep it from getting low at all.

Happy Shelling!

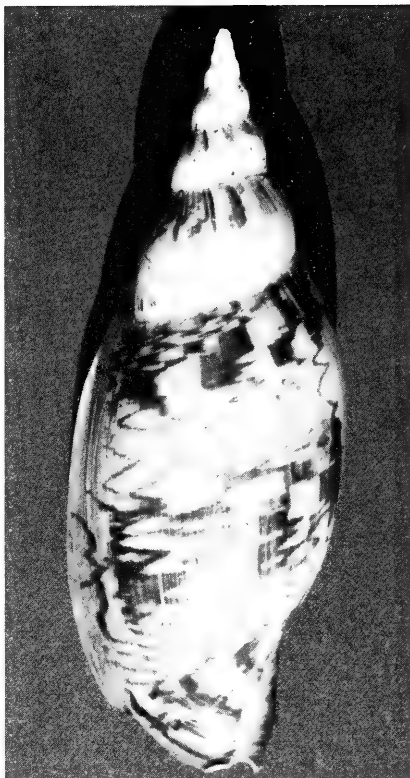
THE WINNERS:

Barbara and Clint Thomas of Clearwater, Florida, were the first readers to correctly identify the picture Steve Barry **didn't** take in the convention article in the September issue. It was, of course, the one of Steve talking to Tucker Abbott. Barbara and Clint would win the Walter Sage hard hat, but, unfortunately, it is still missing. Hard hat, hard hat, who's got the hard hat?

NEW ZEALAND VOLUTES



Pachymelon lutea (Watson, 1882),
90mm.



Pachymelon fissurata Dell, 1963.
180mm.



Pachymelon benthicola Dell, 1963.
280mm.

New Zealand has a number of very notable endemic volutes. Nearly all of these natives are classified in the volutid subfamily Zidoninae, in the genera *Alcithoe*, *Pachymelon*, and *Teremelon*. The Zidoninae are quite variable in shape and are classified by anatomical characteristics of the animal. The three volutes pictured are all *Pachymelon* and were dredged from 400 meters, east of Alderman Island, New Zealand. Photos by Derrick Crosby.

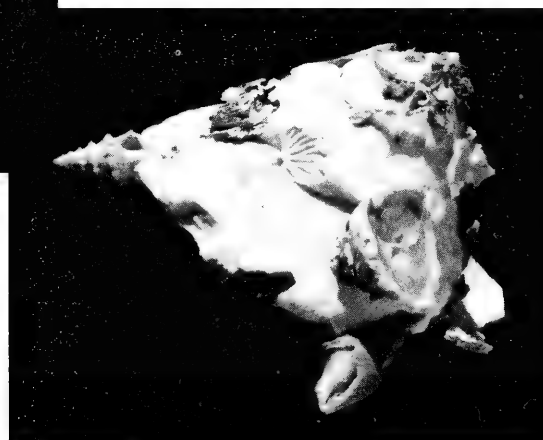


In the first photo, a *Xenophora solaris* Linne, 1764 was picked up by a *X. pallidula* (Reeve, 1842). In the second, a *X. pallidula* (Reeve, 1842) has collected a *X. corrugata* (Reeve, 1842). This shell certainly went for rarities. Attached to the margin on the left is a *Columbarium subcontractum* (Sowerby, 1902); and just below the *X. corrugata*, is a *Bathytoma visagei* Kilburn, 1973. Carrier shells becoming attached to other carrier shells seems to be a rare occurrence. I have only experienced this in these two occasions. Both shells were trawled off Durban, Natal, South Africa.

COLLECTORS WERE COLLECTED

by Werner Massier

P.O. Box 1671, Margate 4275, Natal, South Africa.



MEMBERSHIPS.....

Rich Kelly Pays His Dues and Wins Big Prize!

Rich Kelly, Long Island, New York, was the lucky winner of the dues contest in the September **American Conchologist**. He was the first to find ten correct reasons (you are right, many of you, that there were eleven actual reasons in small type in the September issue...the eleventh was a tie breaker inserted intentionally by your editor — I can too count!) for paying COA dues early. Rich wins a beautiful (albeit rather young) specimen of *Murex fulvescens* collected by none other than your Editor at the July convention in Panama City. That will be in the mail to Rich as soon as we get the rascal cleaned!

There was great murmuring about Rich's methods in winning this fiercely contested prize. He actually took the unorthodox course of handing his answer and renewal to Walter Sage at the next Long Island Shell Club meeting, and of course hand delivery beat out the snailish U.S. Mail. Clever move, Rich. But, you disgruntled non-winners, nothing was in the rules about HOW you got your answers to Walter — hot air balloon, or pony express would have been equally acceptable, and would have won it for you Westerners and left Rich in the dust! (No, you couldn't have FAXed it...checks and U.S. dollars don't travel that way!)

The large number of responses to the contest was quite surprising. A lot of puzzle fans must also collect shells. From the looks of things, we should have offered a subscription to **Games Magazine** instead of a lousy shell! And the varied answers were interesting too. We'll share some of them with you below.

Donna Johnson of Salt Lake City actually cut up her magazine and sent the correct answers to Walter, taped to a bit of the "recycled" magazine envelope. She found all eleven reasons. Mary Ruth Foglino only found the required ten reasons, but she made up an eleventh one...to keep the editor sane. Thanks, Mary Ruth! Steve Kalt of Scarsdale NY, and Craig and Audrey Thorn of St. Augustine FL, xeroxed and sent to Walter every page containing an answer! Mary Palmer, Alva FL, could only find one reason to pay: her dog "Spot" told her to. Good dog, Spot! Elsie Doyle, Englewood FL, says she would have sent the 10 reasons, but they were printed upside down and she couldn't stand on her head long enough to read them. Bet Hamilton, Venice FL, copied her reasons out longhand, including the one about the dog! Hope your writing hand uncramps soon, Bet! And Steve Welty of Dubois WY, typed them out. Had he used a shorter method, he might have won. But his WAS the first right answer from Wyoming.

Patricia Whitaker, Ocean City NJ, even sent Walter a very glamorous photo of herself, for ID purposes in case she won, and perhaps in hopes of swaying the decision against Rich Kelly. Nice try, Pat! Joan Skogland complained that she had sent in her dues as soon as she found the gold form, and discovered the contest later. But she mailed Walter her 10 reasons anyway. And Gene Everson, Louisville KY, said he found all the reasons but didn't send them in because he didn't think he could get them to Walter in time to win! Faint-hearted you, Gene! You live in the same town as the editor. Your magazine reached you before most others had even left the state of Kentucky! You were a sure win!

There was no prize for best answer, but, had there

been, Karen VanderVen would have won it, dues down! We print her answer below for your enjoyment and for the inspiration of all 600 of you who haven't paid your 1994 dues yet:

10 Reasons for Paying My Dues Early

by Karen VanderVen

I'm in such a hurry to pay my 1994 dues that I'm not even going to take the time to find the 10 reasons listed in the **American Conchologist**! I'm just going to put down **my** reasons, hope they're the same, and get them off in today's mail with my check!

1. Well, er, I wouldn't mind having that *Chicoreus fulvescens*. Finding a beautiful orange, knobby Lion's Paw diving at COA wasn't enough? Wasn't everything I found diving, snorkeling, wading, overextending myself at the Bourse, **enough**? Absolutely — I think I obtained almost every shell I'd ever wanted at COA 1993. But the *Chicoreus*, with complete data...sounds tempting.
2. Obtaining the **American Conchologist**. Believe me, when you live north, in inland Pittsburgh, **anything** that reminds you of shells transforms the day. Just seeing the bright cover makes a difference.
3. Receiving my notification of next year's COA convention. This year's may have been my first, but it will definitely not be my last! What a time. I'm already imagining diving off Texas oil rigs (advance notice tells me this is being planned) and walking in the early morning on Padre Island beaches....
4. Having the opportunity to know who else is interested in shells by being able to read over the COA membership list. Through that, I knew several Pittsburghers who'd moved to Florida were still interested in shelling — and enjoyed seeing them at the COA convention. There's even a fellow Pittsburgher on the list whom I am going to try to contact.
5. Seeing the great dealers' advertisements in the **American Conchologist**. When you live in **Pittsburgh**, you're very open to getting shells from whatever means possible — certainly buying from dealers. Poring over their lists is almost as much fun as walking the beaches.
6. Getting help in identifying one's "mystery shells." I'd had one for years, a small, rusty-colored volute-like shell. There it was, smack in the middle of the September issue: the photograph of the juvenile *Voluta virescens*. Now I know.
7. Aiding the planning of personal future shelling activities. One of the recent **American Conchologists** had an enthralling article about shells found diving on wrecks off the North Carolina coast by Teri Marche and Tom Grace. Oh, how I'd love to do that too...I have a lot of diving experience to gain before I'll be ready to tackle those waves and currents — but I'm now working on it with that goal in mind. One day I'll be "Shelling the Ghost Fleet of the Atlantic"....
8. Reading articles by the "greats" in the field — whom you may already know or have met! I've been on several of Peggy Williams' trips and was thrilled to see her excellent shell finding-and-identification guidance in print. I've enjoyed the chance to meet Wayne Harland, author of "Observation of Feeding Habits in *Conus granulatus*" and Kevan and Linda Sunderland, authors of many articles. I never knew there were so many volutes in Florida and the Caribbean until I read their article.
9. Learning about other shell clubs. Again, when you live in **Pittsburgh**, you do your shelling by any means other than being on the water. I already belong to three shell clubs, two as a corresponding member. Watch out, shell club membership chairs — you may find **my** check in the next mail!
10. Taking advantage of the best bargain on earth. Reading over the above, look at all the fun you can get for well under \$20.
11. Now, as to that *Chicoreus fulvescens*? Even if I don't win it, I meant every word of the above. Thank you, COA!

TAXONOMIC NOTE ON THE GENUS *HAUSTELLUM* (GASTROPODA: MURICIDAE)

by Emily H. Vokes

So long as the muricid taxon *Haustellum* Schumacher, 1817, was considered to be a subgenus of *Murex* Linné, 1785, the question of the gender of the word was not of any special relevance. However, with the elevation to the status of full genus (Ponder and Vokes, 1988, p. 17), the matter does become of some concern.

The word *Haustellum* does not appear in a Latin dictionary and in Brown's *Composition of Scientific Words* one finds only the related word *haustrum* — L. a machine for drawing water, a pump (Brown, 1954), p. 769; where the word *haustellum* is cited as an example.

The species name *Murex haustellum* (type species of *Haustellum* by tautonymy) is usually translated as "the snipe's bill murex" and I have always assumed that it was a masculine noun. But some authors have treated the generic taxon *Haustellum* as a neuter noun, which caused me to look deeper; and I fear that this is correct.

The best meaning I have been able to ascertain for the word is the diminutive (-ellum) of the neuter noun *Haustrum*. I can only assume that this was the vernacular name for some water bird with a long bill — the snipe, I presume — that someone thought looked like "a little machine for drawing water." The first use of the name *Haustellum* that I have found is Rumphius (1705), who only says *Haustellum*; but Klein (1753) uses it as a generic name with the species *fimbriatum* and *rugosum*. Schumacher (1817) simply copied Klein and uses the species *laeve* and *carinatum*.

Therefore, it seems obvious that the original author(s) considered the word to be a neuter noun and we must change our species names to agree. This will not prove to be too extensive a task, for patronymics and geographical names are not changed to agree; thus, *H. anniae* and *H. kiiensis* remain the same. Also, names that are based upon nouns, such as *H. chrysostoma*, do not change. The problem arises of knowing which names are nouns

and which are adjectives. For example, *Murex messorius* is translated as the "reaper's hook murex," which sounds like a noun, but the Latin dictionary specifically states "*messorius* - a -um of a reaper." However, *Murex sobrinus* does not change, as *sobrinus* is a male cousin (*sobrina* is a female cousin; presumably there are no neuter cousins).

As best I can determine, the following specific taxa need to be changed to agree with the neuter noun *Haustellum*.

Indo-Pacific

dolichourum, *longicaudum*, *malabaricum*, *multiplicatum*, *rectirostrum*, *serratospionosum*, *tweedianum*

East Pacific

lividum, *recurvirostrum*

Western Atlantic

blakeanum, *messorium*, *rubidum* + *panamicum*, (if you wish) in the Recent fauna; and *adelosum* and *polynematicum* in the fossil fauna.

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Geology Department, Tulane University, New Orleans, Louisiana 70118-5698

TROPHY WINNERS:

Irene and Arthur Prowse received the COA Trophy at the Keppel Bay SHell Club Shell Show in July. Mr. Doug Crossman, Director of the Australian Department of Environment and Heriatge is shown at right (center) presenting them with their Trophy, won by their exhibit, "The Life of Roding and Shells From All Families Named By Him."

At the Oregon Shell Show, held in late July in Portland, Thomas Hale won the COA Trophy for his exhibit, "Trawled From the Deep" a display of shells trawled from depths up to 550 fathoms off Astoria, Oregon. Congratulations, Tom. We wish we'd seen it!



NATURAL LAWS OF COLLECTING

by Brian D. Gregory GwE, HCHD*

Collecting mollusks in the wild for your collection can be rewarding, exhausting, and fascinating. However, there are some natural laws that control our collecting activities, and, since we have no choice but to obey them, we need to understand those laws. Too often these laws, though commonly encountered, are not understood by collectors. I have prepared a list of them as a public service and require no thanks. This was based on a great amount of field research.

I. You will never have your boots when you need to wade.

- A. First corollary: If you do have your boots, the water is always deeper than your boots are high.
- B. Second Corollary: Your boots are still damp from the first corollary.
- C. Third corollary: The shell that is gem+++ quality is just out of reach and ultimately responsible for the second corollary.

II. As soon as you set your collecting equipment down it is 150 feet away.

- A. First corollary: Your partner is always with your collecting equipment.
- B. Second corollary: Your collecting partner always has the tool you need as soon as you need it.
- C. Third corollary: Your partner is always 150 feet away.
- D. Fourth corollary: When your partner wants you to see something that is earth-shakingly exciting, that partner is 300 feet away.
- E. Fifth corollary: The intervening beach becomes narrower and progressively rocky the closer you get to your partner.

III. The rarest of specimens migrate to and become dirt common in protected areas (This section is intimately connected with the third corollary of Section I).

- A. First corollary: The rarer the animal the more common it is in protected areas.
- B. Second corollary: The most common animal in a protected area is, therefore, extinct.

IV. Chitons don't attach to rocks. They bond to rocks. Should a collector be lucky enough to detach one the following corollaries apply:

- A. First corollary: Chitons can curl up at about light speed.
- B. Second corollary: Dead chitons can curl up.
- C. Third Corollary: Fossilized chitons can curl up.

V. When you find a supply of exceptional specimens for trading, there will be at least two price lists waiting for you in the mail, offering them real cheap (refer to Section III).

VI. Your collecting gloves are always at home.

- A. First corollary: You never need your gloves unless they are at home.
- B. Second corollary: You will never need more than one pair of collecting gloves during a lifetime of collecting.
- C. Third corollary: During the distribution of your estate your family will be puzzled immensely by the presence of an unused pair of gloves.

*Our thanks to Brian Gregory for setting forth these rules for the less orderly-minded among us and to the Pacific Northwest Shell Club whose newsletter, **Dredgings**, first published Brian's Rules.*

*Gee-whiz Ecologist, Hairy Chested Hero Diver
1124 Pennsylvania Avenue, Bremerton, WA 98310

NEWS OF SANIBEL MUSEUM

Several developments worthy of note have occurred on Sanibel Island, future home of the Bailey-Matthews Shell Museum this past year. First, the timber bridge to the site was completed in April. The building plans were submitted for competitive bids, and a contractor has been selected, Wright Construction Corporation. The Capital Campaign passed the million dollar mark. The Shell Museum Preview Center is up and running, with exhibits on scallops, fossil shells, and carrier shells, among others.

Two major exhibits for the museum are complete, "Shells in Tribal Art" and "Gifts from the Seas of Sanibel and Captiva"; and a third is under construction, a classification wheel entitled "From Chaos to Order." Archie Jones, foremost authority on the *Liguus* tree snail, has given the museum a pair of each of 53 of the 54 known forms of these colorful south Florida snails, which will be featured in a 12-foot Everglades habitat scene. (Incidentally, Archie maintains that there is no danger of extermination of any form of these protected snails by collectors, but that fire and introduced European rats are a greater danger.)

AUCTION ITEMS NEEDED FOR 1994 CONVENTION

Before we know it, it will be July and we'll all be in Corpus Christi, Texas, celebrating the 22nd Annual COA Convention. Since this is the first convention to be held in TEXAS, convention attendees will be in for a real treat and an opportunity to sample true TEXAS hospitality.

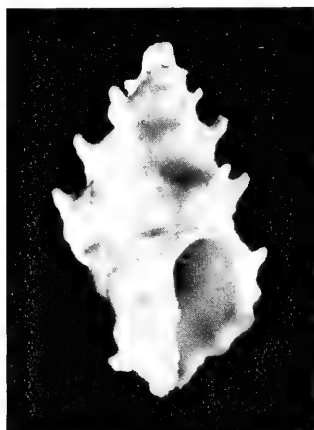
As auction chairman, I am asking COA members and dealers to please donate quality specimen shells for the oral auction, silent auction, door prizes and raffle. Shell books, shell art, shell photography, coral specimens, and other shell-related items will be greatly appreciated. Although the convention is still six months away, it is **never too early** to send your donations to:

Dave Green
12307 Laneview Drive
Houston, TX 77070

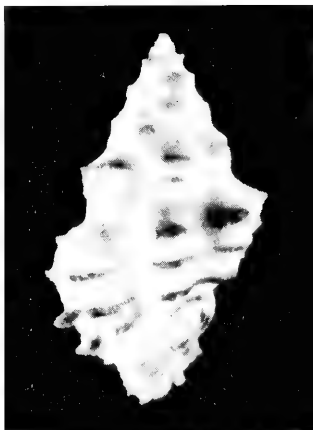
Thank you for all your help and cooperation in helping next year's auction to be the biggest and best yet. If you have any questions or comments, please contact Dave Green, Auction Chairman at 713-376-5630.

CARIBBEAN MURICIDS

by Kevan and Linda Sunderland



Attiliosa species. 15mm. 70', north coast of Jamaica.



Attiliosa aldridgei Usticke, 1969. 29mm. 60', New Providence Is., Bahamas.



Attiliosa glenduffyi Petuch, 1993. 14mm. 8', Samana, Dominican Republic. PARATYPE



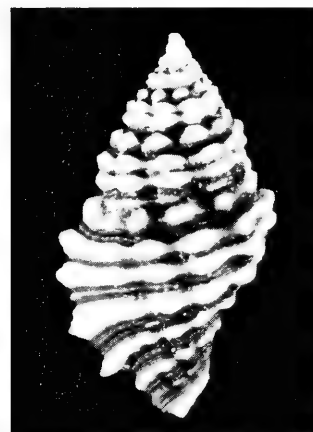
Attiliosa philippiana (Dall, 1889). 19mm. 120', Pompano Beach, FL.



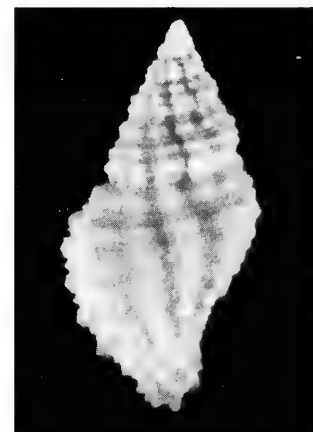
Murexsul (or *Muricopsis*?) *emipowlusi* Abbott, 1954. 8mm. 60 fms., off Contoy Light, Gulf of Campeche, Mexico



Muricopsis (*Risomurex*) *caribbaeus* Bartsch & Rehder, 1939. 13mm. 5-10' Bay Islands, Honduras.



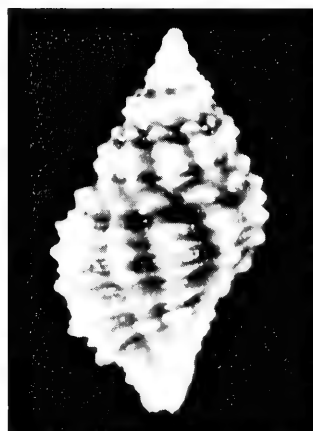
Murex (*Risomurex*) *deformis* Reeve, 1846. 17mm. 5', Bay Islands, Honduras.



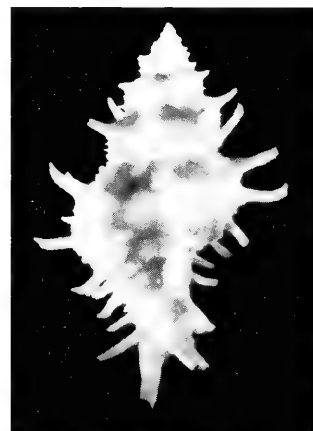
Muricopsis gilbertharrii Weisbord, 1962. 16mm. 30', off Cubagua Island, Venezuela.



Muricopsis (*Risomurex*) *roseus* (Reeve, 1846). 15mm. 10-20', Shell Beach, Antigua.



Muricopsis schrammi (Cross, 1863). 10mm. 8', Samana, Dominican Republic.



Muricopsis sunderlandi Petuch, 1987. 38mm. 80', Cay Sal Bank, Bahamas. PARATYPE.



Muricopsis warreni Petuch, 1993. 24mm. 50', North coast of Jamaica. PARATYPE

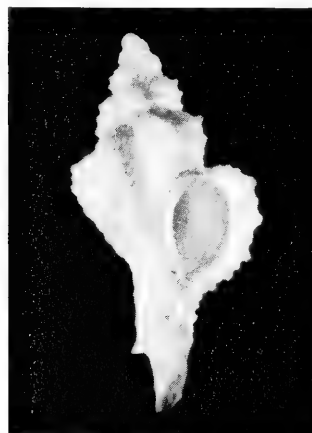
Special thanks to Linda and Jim Brunner for sharing their specimens of *Muricopsis praepauxilla* and to Dr. Emily Vokes of Tulane University and to Daniel Warren of Fort Lauderdale for their continued assistance.



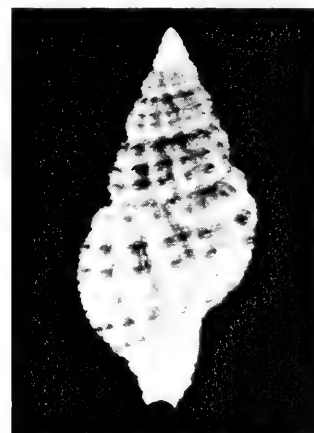
Attiliosa striata Gabb, 1873. 24mm, 75', off Pompano Beach, FL.



Calotrophon andrewsi E.H. Vokes, 1976. 16mm. 240', Egmont Key, FL. Comp. with *A. striata*.



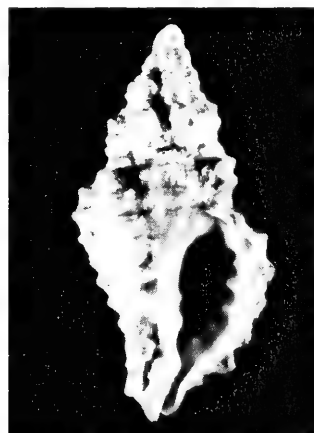
Favartia (?) species. 10mm. 60 fms., off Egmont Key, FL.



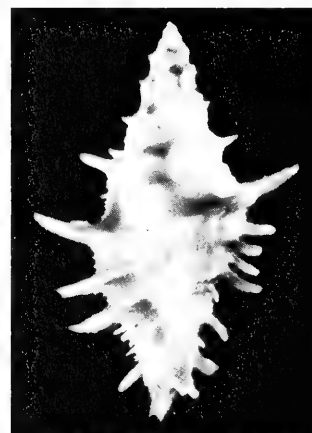
Morula turricula von Maltzan, 1884. 15mm. 80', Key West, FL. (*didyma* Schwengel, 1943) is newer name.)



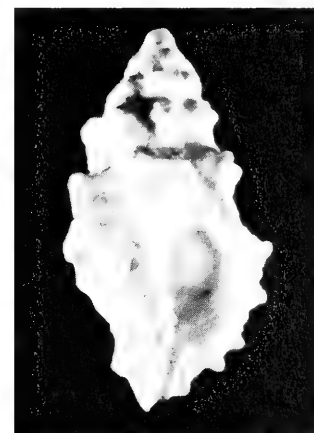
Muricopsis huberti Radwin & D'Attilio, 1976. 20mm. 5', San Blas Islands, Caribbean Panama.



Muricopsis nicocheana Pilsbry, 1900. 26mm. 10', southern Brazil.



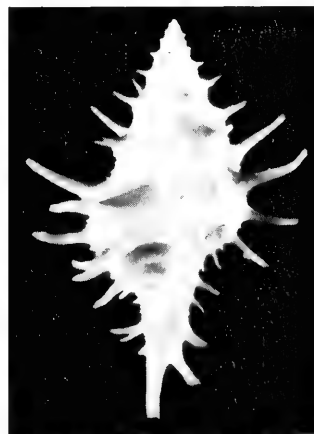
Muricopsis oxytata M. Smith, 1938. 37mm. 80', Cay Sal Bank, Bahamas.



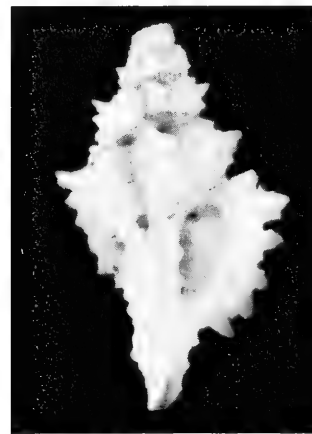
Muricopsis praepauxilla Maury, 1917. 17mm. 3', Fort Jeudy, Grenada.



Muricopsis (Risomurex) withrowi Vokes & Houart, 1986. 19mm. 10', off Pigeon Point, Tobago, W.I.



Muricopsis zylmanae Petuch, 1993. 44mm. 80', Cay Sal Bank, Bahamas. PARATYPE



Pygmaeptyrys species. 6mm. 50', Utila, Bay Islands, Honduras.

FOR FURTHER READING:

- Abbott, R. T. 1974. *American Seashells*. 2nd. Edition.
- Houart, R. 1990. "On the rediscovery of *Muricopsis (Risomurex) schrammi* (Crosse, 1863)." *American Conchologist*, 18(1): 8.
- Petuch, E.J. 1993. Molluscan Discoveries from the tropical western Atlantic region. *La Conchiglia*, No. 266: 51-59.
- Radwin, G. & A. D'Attilio, 1976. *Murex Shells of the World, an Illustrated Guide to the Muricidae*.
- Vokes, E.H. 1976. Cenozoic Muricidae of the Western Atlantic Region, Part VII, "*Calotrophon* and *Attiliosa*." *Tulane Studies in Zoology and Paleontology*, 12(3): 101-132.
- _____. 1992. Cenozoic Muricidae of the Western Atlantic Region, Part IX. "*Pteryonotus*, *Poirieria*, *Aspella*, *Dermomurex*, *Calotrophon*, *Acantholabia*, and *Attiliosa*: Additions and Corrections." *Tulane Studies in Geology and Paleontology*, 25(1-3): 1-108.

BURSIDAE AND RANELLIDAE UPDATE

Back in 1985, when Charlie Glass was editor of what was then the *Conchologists of America Bulletin*, he published an excellent article by Dr. A.G. Beu entitled "A Classification and Catalogue of Living World Ranellidae (= Cymatiidae) and Bursidae (Dec. 1985, pp. 55-66). In that article, Beu pictured four "soon to be described species" which he indeed did soon describe, in January 1987 in the *New Zealand Journal of Zoology*, Vol. 13, pp. 273-355, along with ten other new species and subspecies. Pictured here are the four species, along with their names. The 1985 article is finally complete.

The four shells are *Bursa (Colubrellina) quirihorai*, *Bursa (Colubrellina) latitudo fosteri*, *Tutufa (Tutufella) boholica* and *Cymatium (Septa) bibbeyi*, all Beu, 1987. The first three are from the Philippines. Glass and Foster obtained them from Quirino Hora of Bohol, and brought them to Dr. Beu's attention. The pictured shells are all paratypes.

Tutufa boholica is by far the most uncommon and is quite difficult to distinguish, Foster and Glass tell us. It is undoubtedly most often confused with *Tutufa tenuigranosa* (E.A. Smith), but can be distinguished by its double row of nodules or ridges within the aperture, a characteristic it shares within the genus only with *T. rubeta*, from which, in turn it may be distinguished by the red aperture of the latter.

Figure 2. *Tutufa (Tutufella) boholica* Beu, 1987, a 118mm specimen. (photo, Charles Glass and Bob Foster, Abbey Specimen Shells).

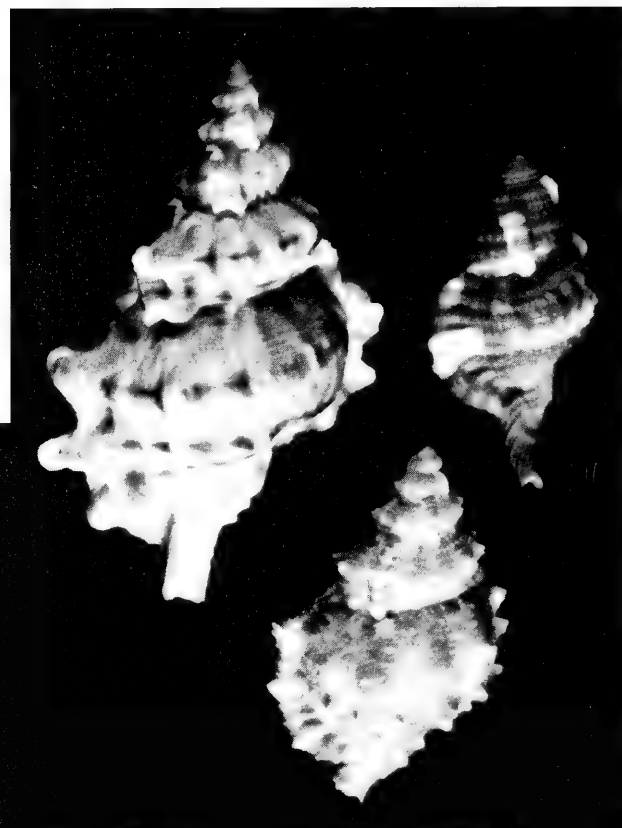


Figure 1. (upper left): *Bursa (Colubrellina) quirihorai* Beu, 1987, a 66.5mm specimen (below, center): *Bursa (Colubrellina) latitudo fosteri* Beu, 1987, a 46mm specimen and *Cymatium (Septa) bibbeyi* Beu, 1987. (photo, Charles Glass and Bob Foster, Abbey Specimen Shells)

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NOT FOR BEGINNERS ONLY:

The Year of the Dogwinkle

by Clarissa Stuart

In February of 1992, I visited my daughter in Washington, near Dyes Inlet, one of the many waterways that make up Puget Sound. One afternoon the sun was out (though the temperature was far from warm) and the day was wholly pleasant — I was soon lured to the water's edge. Since my visit was not planned with shelling in mind, I had not checked local tide tables to see if there was a decent low tide — but I got lucky. There was indeed a low tide (about -0.2 feet, if I remember correctly), and the beach was nicely exposed. Even the sand dollar beds on the sandy bay bottom were accessible.

Walking across the gooey mud flats that conceal rich beds of Geoduck and Butter Clams, I struggled to keep my shoes on as the mud sucked hungrily at my feet. And where it wasn't sticky, the mud was slippery — keeping my footing was tricky. Finally I came to a rocky area that promised to yield what I sought — *Nucella lamellosa* (Gmelin, 1791). Until then, I had seen no sign of their presence; no dead or broken *Nucella* shells anywhere — only clams by the bushel. Suddenly, a flash of incongruous orange caught my eye. I looked more closely and discovered I was surrounded by them: orange, white, yellow, brown, amber, grey and even apricot. Most had lovely frills (the water was pretty quiet there — not much wave-action). Astonished at the plentitude as well as the lovely colors and ornamentation, I gathered into my ziploc bags as many color variations as I could. Then I reluctantly returned to my daughter's home with my treasures, but promised myself that I would return to see about picking up a few extras for trading.

And return I did. Three months later, I went back to that same stretch of beach, only this time I couldn't find a single *Nucella*. My expectations were dashed and I was quite puzzled. When I described the events to a fellow shell collector, he suggested the possibility that they had come up from the deeper water to spawn. "That sounds reasonable," I thought, but how would I ever prove it? I had seen no evidence of spawning activity at the site, and wasn't entirely sure of what I might have seen, had there been spawning in progress.

Nine months have passed, and now it's just one year since my original find. Last weekend, the second weekend of February, 1993, I again headed for Dyes Inlet. An air of excitement prevailed. I suspected that timing might be crucial (especially if seasonal activities were involved) but I was there at what I perceived to be the "right" time. Once again, I was favored with modest low tides.

I spent an entire afternoon scouring my secret beach, but there wasn't a single specimen to be seen. I did find two broken and eroded *Nucella* shells, but no live animals. Something about the beach kept nagging at the back of my brain, but I couldn't pin it down. Finally it came to me: the contour of the shoreline was different somehow. And the rocks were gone. In their place was now a low wide mound of gravelly sand and small stones. The answer was clear. This material had been dredged from the bay and dumped here, effectively wiping out the preferred habitat!

I grumbled all the way back to my daughter's home, but was unable to think of an effective way I could have prevented such an event. Still, I was grossly disappointed to have lost this special place — and to have been unable to prove or disprove my theory about when the *Nucella* might spawn.

Sunday was Valentine's Day. We had a pleasant breakfast and exchanged nice Valentine cards. I had given up on the idea of completing my "quest" this year, but my son-in-law came to the rescue. He is a submariner stationed at a submarine base nearby, located on Hood Canal. In the course of his duties he has occasion to patrol the shoreline of the base, and he indicated that he knew of a beach that I ought to check out. Well he didn't have to twist my arm — off we went!

After passing through two security gates to get onto the base, we drove to this new beach. At a distance, it didn't look terribly promising, and I felt my heart sink a little. But we walked out onto the shore for a closer look. "Hmmm," I was thinking, "No rocks. Not a very good sign." Soon we were no longer walking on sand or gravel, but a deep layer of large, gnarled clusters of oyster shells that had broken from their beds and washed ashore. From the sheer numbers, this must have been occurring for **years** without benefit to any beachcombers. Hundreds, maybe **thousands**, of oysters crunched beneath our feet. We simply could not take a step without stepping on shells — not just oysters, but all manner of clams, and huge, dead *Lunatia lewisii* (Gould, 1847), the Lewis' Moon Snail.

We stopped at the edge of a shallow tidepool and squatted down for a closer look. I rolled a cluster of oysters over and ... could it be? YES!! There they were! Frilled Dogwinkles appeared *en masse* under nearly every cluster we overturned, stacked two and three deep on one another. The first thing I noticed was that these fellows had little if any ornamentation, and their colors were a bit on the drab side. I attributed this to the more exposed shoreline for the one, and to a different diet for another. But, what was this? Something new had been added. I was witnessing a veritable spawning frenzy, with egg cases crowded together on every square millimeter of available surface. They clung in great profusion to small stones, shells, oysters — both living and dead — and even to their parents. Each egg case looks like a tiny inverted amber ampoule anchored by a slender strand; each ampoule is about 1/4" long.

Elated, I gathered a few specimens (for a growing reference collection), being careful to take only animals uninvolved in any amorous activities. Perhaps some had completed their spawn, or perhaps they were not mature enough to participate, but about 30% of the animals present were not spawning. Other species that were present included crabbed specimens of both *Margarites pupillus* (Gould, 1846) and *Amphissa versicolor* Dall, 1916, and live *Crassostrea gigas* (Thunberg, 1793), *Searlesia dira* (Reeve, 1846), *Nucella emarginata* (Deshayes, 1839), and *Nassarius mendicus* (Gould, 1849).

I left with a renewed belief that one does not have to be a SCUBA diver or travel to the tropics to actively collect and study shells; beachcombing and tidepooling are extremely gratifying. I now heartily anticipate the coming of April, May, and June, and the low tides that are predicted then. I will be making at least one additional trip to that **new** "special" beach (for one of those -2.5 foot tides) with my eyes open for more and different species that might be exposed.

Looking back, I realize that I could have researched the information about the spawning season of the *Nucella*, but then I wouldn't have derived nearly as much pleasure (not to mention

NOT FOR BEGINNERS ONLY (Continued from previous page)

fresh air!) from the effort. While what I experienced and learned might be "old hat" to some, could it be that the experience itself is the thing? I think so.

To the Reader: Imagine my embarrassment when I learned, only after writing of my experience, that *Nucella* are known to spawn often throughout the year. While this information renders some of my story scientifically worthless, I left it intact for submission to *American Conchologist* because I still felt it was a good yarn. I hope you think so too.

BOOK REVIEWS

KINGDOM OF THE SEASHELL by R. Tucker Abbott, Ph.D. 1993. 256 pages, heavily illustrated, 8 1/2" X 11", paperbound. American Malacologists Publ. P.O. Box 1088, Andover MA 01810-0019. \$19.95.

This fine old friend, long out of print, celebrated its 21st birthday in the nicest possible way by reappearing, ever-so-slightly modified and beautifully repackaged, in a large-format paperback edition. *Kingdom of the Seashell* has been, for the past 21 years, the book amateurs turned to for their general education on mollusks. That it is again available is a cause for celebration, for this beautifully conceived, written and illustrated book has a place on the bookshelf of every shell enthusiast, be he amateur or professional, novice or expert.

For those of our readers who don't know it well, *Kingdom of the Seashell* is a "broad-spectrum" survey of seashells; it covers all the important topics, with chapters on the definition of mollusks, including an introduction to each of the six molluscan classes, their biology and their ecology, their habitats, the habits of better-known molluscan groups, and the evolution and development of mollusks from earlier life forms. Dr. Abbott also explores in further chapters those molluscan provinces which offer the most prolific collectible shell populations: Japan, Australia, South Africa, Thailand, Portugal, Hawaii, New England, the West Indies, New Zealand and, of course, the Philippines; and he delves into the subjects of how to observe, find, clean, and collect these mollusks. There is another chapter devoted exclusively to rare shells and collector's items.

In the three concluding chapters, *Kingdom of the Seashell* opens the door to such fascinating peripheral concepts as the cultural study of mollusks — from tools and ornaments for primitive man to jewelry for modern humans. Also covered are the importance of shells in art, their employment as heraldic devices, the commercial value of mollusks and their shells, mollusks in medicine, mollusks in religion, and the biology and history of pearls. Early collectors, significant shell voyages, and famous malacologists come to life in text and pictures.

Aside from the new paperback format and the changes made necessary by a new publisher (American Malacologists) and a new edition, the slight modifications mentioned above are hardly noticeable: a new dedication to his wife Cecelia and all his children, and delightful new cover photographs. The front cover alone makes the book a "must-have:" Dick Kaplan's "A Seashell for Katie," a blow-up of a lovely laddered *Epitonium* species centered in a piece of mushroom coral, all in peach and flesh and cream tones.

The only other change was the addition of a very few more recent books to the "Guide to the seashell literature" following the text of the book. While the "Guide" was an excellent one for 1976, the intervening years have seen many very worthwhile, indeed landmark, additions to the body of popular literature on mollusks. Considering the ways in which this book is likely to be used, we would have expected it to contain a more up-to-date supplemental

Regarding the specimens I collected which appeared to be a fairly uniform olive green and/or brown in color: subsequent cleaning in a 50/50 bath of Clorox and water revealed shells of bright clean white! Though a few showed very, very pale shadings of yellow and peach, the predominant color was **white**. Most of the apertures, however, displayed shades of pale purple and yellow. Also, close observation showed that the shell material was quite thick, some had a few teeth in the aperture, and most of the apices and siphonal canals were quite eroded.

reading list than this short addendum. While Dr. Abbott's 1982 *Compendium of Seashells*, his 1989 *Compendium of Landshells*, and Kay Vaught's *Classification of Living Mollusca* are certainly to be considered in the landmark category, we question the placement of a Golden Junior Guide on *Starfish, Seashells and Crabs* on the list at the expense of, say, Twila Bratcher and Walter Cernohorsky's *Living Terebras of the World*, or perhaps Kevin Lamprell and Thora Whitehead's *Bivalves of Australia*. And as long as he was including, we wish he had seen fit to include, on his list of "Popular Shell Magazines," our own *American Conchologist*.

With the exception of those familiar old front- and back-cover photographs of shells in the sand, all the illustrations from the hardback edition are preserved in this new version. These include the quite spectacular set of full-spread, full-color photos introducing each chapter: a rather intimate photo of a *Strombus bulla* at home; several shots of flamboyant, gypsy-dressed nudibranchs; a nicely-boxed collection of Pectinidae; an elegant shot in understated grays and tans of the allied cowry, *Primovula punctata*, gliding among the soft coral polyps it calls home; a Florentine-carved cameo helmet, an exceptionally colorful sailor's valentine, and an idealized collector's desk. These are augmented by many other fine photos and drawings, both full color and black-and-white, illustrating every conceivable facet of the study of mollusks — gourmet seafood dishes and ancient art vying with old prints and etchings and specimen shells. The illustrations are one of the primary strengths of *Kingdom of the Seashell*.

Another strength is the extremely lucid and engaging prose style that is one of Dr. Abbott's hallmarks. That style coupled with his vast experience and wide knowledge of every aspect of the study of shells enables him to entertain the reader at a pretty steady clip through all 250 odd pages, with here a fact, there an anecdote, and everywhere those engaging, fascinating, photogenic mollusks.

—L.S.

LIFE STYLES OF THE SEASHELLS by Beatrice E. Winner. 1993. 61 pages, illus., plastic ring-bound. E.B.M. Publ., P.O. Box 14923, North Palm Beach, FL 33408. \$8.50, plus \$1.50 for postage and handling.

This charmingly written introduction to the fascinating breeding and feeding habits of 32 common Florida gastropods will delight and help those interested in studying live mollusks.

The author has related her many years of experience with aquariums containing 30 marine, one land and one freshwater species of univalves. She has indicated their food preferences and related many interesting behavioral patterns.

This little book, with many useful sketches by the author, ends with chapters with sound advice about keeping a home salt-water aquarium and listing the recommended foods for captive mollusks. For the modest price, amateur conchologists can't go wrong in adding this booklet to their library.

—R. Tucker Abbott

FLOTSAM AND JETSAM

"Flotsam and jetsam" is old maritime terminology dating from early European salvage laws. Saving ships in distress and scavenging wrecked ones was a common and profitable occupation around seacoasts; people who did this for a living were termed "wreckers," and any of the goods remaining from sea disasters were theirs for the taking. "Flotsam" is the miscellaneous stuff which remains afloat or washes ashore when a ship wrecks. "Jetsam," its oft companion term, applies to cargo or equipment thrown overboard (jettisoned) by a ship in distress in order to lighten the load. Usually it sinks and must be recovered by diving. (There is a third term, "ligan," not so generally in use, which is applied to material the owner has intentionally sunk with an attached buoy to mark ownership and location. Unlike flotsam and jetsam, such goods must always be returned to the owner.)

Things maritime, material which floats, and material which sinks being very common on the shipwreck of this editor's desk, I've long named miscellaneous desk drift with these handy collective terms. With the acquisition of new filing cabinets and the consequent house cleaning, lots of jetsam has become flotsam which needs to see the light of print. Casting about for a catchall name for a column composed of short, interesting, unrelated tidbits netted from this drift, I have agonized over such sterling possibilities as "From the Editor's Desk Litter," and "Snips and Snails." But nothing seemed just right. The generic terms still seemed infinitely preferable. So "Flotsam and Jetsam" it is. (The *ligan* comes with a SASE.)

Stu Lillico, several times editor of **Hawaiian Shell News**, was recently honored at a dinner given by members of the Hawaiian Malacological Society. Stu, who has been quite ill for some time, has given up the editorship, but is working with the new editor, Dwayne Minton, for a smooth transition. We welcome Dwayne to the position but we are so sorry to hear of Stu's illness and will miss his expert hand guiding the lines of **HSN**.

Bunnie Cook, HSN and COA member in Hawaii, tells us that Twila Bratcher, COA member and terebra expert, and her sister Billie Brown, flew over from California for Stu's dinner. Twila is herself just recovering from a serious accident. It is marvelous to hear that she is so much better.

Twila Bratcher is doing so much better, in fact, that not only did she travel to Hawaii to attend the dinner honoring Stu Lillico, but she has ventured in another direction as well, into the state of matrimony. She's now Twila Bratcher Critchlow, and we wish her all the joys that marriage can bring.

Walter Sage has kindly reminded us that the system by which we name mollusks (and other living things) is called the **binominal** system, and not the "binomial" system, as was written in the "Sheller's Handbook - Why Is It?" **AMCONCH** Vol. 21 (2) p. 24, **American Conchologist**. Please note that this is the International Commission for Zoological Nomenclature's choice of spelling for the word. Webster's and the American Heritage Dictionaries do use "binomial," however. Although we'd suggest complying with the ICZN's choice, we'd welcome some clarification of this disparity.

Along with a photo of the COA Award-winning exhibit at the British Shell Collectors Club Shell Show (see p. 12, March, 1993), Kevin Brown, Honorary Secretary of the British Club wrote to us, "May I take this opportunity to thank you and all at COA for making this award available to us. It has certainly helped raise the standard of entries over the years by causing greater competitive-

ness." And our thanks to you, Kevin. It's nice to know that our coveted COA award is appreciated elsewhere, and is bringing about the hoped-for effect on our hobby. It is interesting to note that the British Shell Club was among the very first clubs to award the COA Trophy, back in 1979.

Another new museum devoted entirely to shells is reported to have opened this November in South Africa [See **AMCONCH** 20(3): 13.] Dawn and Michael Meyer, known to many collectors through their years of exchange, plan the largest public display of South African mollusks in the world at their new, privately supported museum in Shelly Beach, on the Natal South Coast, about an hour and a half from Durban. The **Sea Shell Museum** will also feature more than 5,000 species of worldwide mollusks, a history of shells and man, fossil shells, a collection of shells on stamps and greeting cards, and "shell work" from throughout the world, with a "ceiling high castle in shells" as its centerpiece. For more information or perhaps to contribute to this enterprise, write Dawn and Michael Meyer, P.O. Box 824, Shelly Beach, Natal 4265, South Africa.

Kevin Lamprell and Thora Whitehead's acclaimed recent book, **Bivalves of Australia**, has, like all books, a few little errors. Thora lists:

Species 10: spelling is "*holosericus*."

Plate 28: Shell figure 184 is *Vepricardium fimbriatum*, not *incarnatum*; *V. fimbriatum* does not occur in Australia, while "*V. incarnatum*" does. Text is correct. For an illustration of the latter, see Harry Lee's article, "The Cockles — Charm and Challenge" [**AMCONCH** 17(1): 14-16].

Plate 30: Shell figure 201 is not *Acrosterigma vlamingi* but a Queensland look-alike for *A. vlamingi*. Text is correct.

Plate 51: Shell figure 380 is *Donax columbella*; 381 is *D. faba*. The numbers were transposed.

Thanks to Gene Everson for passing this along to us.

Unitas Malacologia, an international malacological organization, is making plans for their 12th International Malacological Congress. This event will be held in Vigo, Spain, September 3-9, 1995, and is open to anyone carrying out scientific work on mollusks, marine and non-marine.

The Congress is in its planning stages now. Symposia and workshops are already being mapped out. Anyone wishing to organize informal meetings or single-topic workshops should contact Unitas Malacologia's president, Angel Guerra, Instituto de Investigaciones Marinas, Eduardo Cabello, 6, E-36208, Vigo, Spain, Phone 34-86-23 19 30; FAX 34-86-29 27 62.

Vigo is a port city on the Atlantic Ocean, and is located in the northwestern corner of Spain, just above the Spanish border with northern Portugal. It is one of the most important fishing ports in the world. The spectacularly beautiful Ria de Vigo, the Vigo Estuary, where approximately 90,000 metric tons of mussels, clams, oysters and other bivalves are harvested annually, is also the site of the Cies Islands, believed by historians to be the Tin Islands or Casiterides of the ancient Romans. It should be a great vacation spot as well as a fascinating conference.

We hear by the grapevine that COA member Peter Stimpson of Loudon, TN has recently brought his *Cypraea* collection to completion with the acquisition of a *Cypraea decipiens perlae*. Congratulations, Peter. What's next?

SANIBEL PROPOSES LIVE SHELLING BAN

No more shelling on Sanibel? Not if the Sanibel City Council has anything to say about it. They've passed unanimously, on Sept. 7, a resolution asking the Florida Marine Fisheries to begin proceedings to prohibit collection of live shells from the island's beaches. This follows a similar 1983 move, when the Sanibel City Council requested the two-a-day law, two specimens of a species per day per person. In effect since 1987, this regulation reportedly has proved too difficult to enforce; greedy tourists have been nabbing more than their daily quotas of *Melongena corona* and *Cyrtopleura costata*. So Sanibel proposes adding mollusks, as well as starfish and sand dollars, to the list of animals that are protected

on Sanibel. (Clams, oysters and coquinas, are to be exempted from the ban; apparently it is environmentally acceptable to eat coquina broth but not conch chowder or Coquilles St. Jacques.)

We wonder if a similar ban will be issued against improper sewage disposal, new building on the island, dredging operations and other human intervention in the environment that affects water purity and produces mass kills of mollusks and other sea life. In the Florida Keys, in spite of the no-shelling law there, Queen Conchs remain scarce. Ironically, research has led to the suspicion that the shortage of Queen Conchs is caused, not by overfishing and indiscriminate shelling, but by poor sewage treatment.



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OUR COA CLUBS — A CLOSER LOOK

by Nancy Gilfillan

The Guam Shell Club

Guam, an island about 25 miles long by 9 miles wide, is the largest and most southern of the Mariana Islands. It is located about 1,500 miles straight south of Tokyo, 1,500 miles east of Manila in the Philippines, and 3,500 miles west-southwest of Hawaii. It has a very tropical climate with two seasons — rainy, or dry and windy. Typhoons are fairly frequent on the island, but not usually so frequent as last year; Guam had five direct hits!

Guam is a U.S. territory; major employers include the government of Guam, the U.S. government (Federal Civil Service employees of military bases), and tourism. Until a few years ago, Guam was home to the world's largest McDonalds restaurant, and it is believed that Guam still leads the world in Spam consumption.

Founded in 1965, the Guam Shell Club has consisted of a diverse group of military and civilian families joined by an interest in shells. The club has been larger than 100 active members, and as small as five or six, but it typically has about 30 dues-paying members, about 10 or 15 of whom are currently active. Dues are nominal — \$5.00 a year individual, \$8.00 family, and \$50.00 life membership. If you are interested in joining, contact Fred Schroeder, Secretary and editor of their monthly **Guam Shell News**, at 149 Lilac Court, Latte Heights, Guam 96923.

The club's members are a rather diverse group, ranging from newcomers to shelling to some old experts, beachcombers, divers, and collectors-by-mail; one member has even published a cookbook on mollusks. They currently meet at 7:30 p.m. at the University of Guam's Marine Lab on the second Tuesday of each month. Programs feature outside speakers whenever available, and other dates are filled with talks by their own members. They have a "shell-of-the-month" competition with prizes for adult and junior scuba, snorkel, reef-walk, and dead-found categories.

The Marine Lab and the Guam Shell Club are loosely affiliated. Barry Smith serves as their scientific liaison with the Marine Lab. A professor there, he is very interested in mollusks, especially land snails. He also helps to arrange presentations to the club by other Marine Lab faculty members. This is especially valuable to the club since there is no natural science museum or

shell museum on Guam. The Marine Lab does have a reference collection of mollusks, but much cataloguing work needs to be done.

The Guam Shell Club puts on a yearly Shell Fair over a weekend in the fall in the central court of a shopping mall. They offer prizes for the best exhibit, best shell, etc., set up salt water aquaria, show ocean-related videos, and generally make themselves known to prospective members. The main activity of the Shell Fair, however, is fund-raising from sales of the club's shell inventory to the public. Their gross usually runs around \$1,000, which keeps them operating another year and, more importantly, lets them offer a \$500-for-one-year research grant for study relating to mollusks on Guam. The club has now given away its second yearly grant, and its members are quite excited about it.

Guam offers quite a diversity of shelling habitats. In most areas the island is surrounded by a barrier reef 100 to 400 yards offshore, offering shallow sand patches and reef flats inside the reef. Outside the reef are mainly steep drop-offs to 150+ feet, with large boulders and caves in some areas. Inside the lagoons (and the huge Apra Harbor) are large expanses of hard and soft corals and sandy patches, plus some areas with deep piles of coral rubble.

Club members report that a large number of Indo-Pacific shells can be found at least occasionally on Guam. They have about 60 species of cowries, 60+ cones, and 150+ Mitridae and Costellariidae; however, only about 5 species of olives, one tiny marginella, and no volutes are found. To their knowledge, Guam has no true "endemic" shells. But the prized *Strombus taurus* comes only from the Marshall and Mariana Islands, and *Pterynotus laqueatus*, although it has been found in Hawaii, Taiwan, and elsewhere, seems to be more commonly found on Guam. Infrequently they find *Cypraea aurantium*, *goodallii*, *dillwyni*, and really nice dwarf *mappa*, as well as *Conus aureus*, *cylindraceus*, and occasionally *aulicus*. Sounds like a pretty good place for finding your dream shell, does it not?

If you should happen to be in the neighborhood, do call Fred at (671) 632-5026 for shelling suggestions or for meeting with the Guam Shell Club members; they will be delighted to welcome you.

9922 Edward Avenue, Bethesda, MD 20814

Just as we go to press, we learn that Nancy Gilfillan has lost her husband, James M. Gilfillan, Nov. 13.
All of our hearts go out to you and your family at this difficult time, Nancy.

NOTES FROM THE PAST

by Bob Purtymun

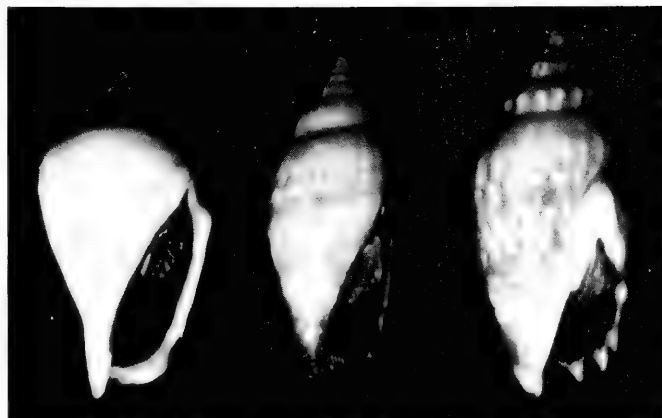
Three little strombs: *dentatus*, *fragilis*, *gibbosus*. Kinda musical sounding, eh? However, these little shells live to the beat of a different drummer.

Strombus (Canarium) dentatus Linnaeus, 1758 is a deep water sand shell, usually found below 30 feet. In the early 1970's it was fairly common on the north shore of Oahu in sandy areas 80 to 120 feet deep. It may still be — I haven't collected there since 1982. Another fine area was Tutuila Island, American Samoa, where I found it in sand channels 30 to 100 feet deep; it was quite often crabbed. The best time for collecting this little gem is at night when it is crawling on the surface of the sand. That is how I found some beauties in the lee of Helix Reef, Great Barrier Reef, Australia in December, 1983.

Strombus (canarium) fragilis (Roding, 1798) I have found in the shallows down to 75 feet deep in dead-weedy coral rubble. It is not a very common shell but is found in most of the Pacific area. I discovered the *fragilis* heartland in Apra Harbor, Guam, Marianas, where I found a large colony in 5 to 15 feet of water off Gab Gab Beach in October 1982.

Strombus (Gibberulus) gibberulus gibbosus (Roding, 1798) is a very common shell in most of the Pacific. On a night dive on Majuro Atoll, Marshall Islands in 1978 we found a shallow sand area literally carpeted with this little shell — 8 or 10 to the square yard.

Tom Rice's 10th Edition, **Catalog of Dealers' Prices for Marine Shells** reflects how rare these three little shells are by their prices. *S. dentatus* lists at \$1.50 to \$5.00. *S. fragilis* lists at \$8.00 to \$15.00, and *S. gibbosus* lists at \$.35 to \$1.50. I consider all the *Strombus* in my collection as rare. Each shell brings back fond memories.



L-R: *Strombus dentatus*, *Strombus fragilis*, *Strombus gibberulus gibbosus*.

1994 WINTER & SPRING SHELL SHOWS & OTHER EVENTS

by Donald Dan, COA Awards Chairman

- Jan. 22-23 **Astronaut Trail Shell Show**, Melbourne, FL
Jim & Bobbi Cordy, 385 Needle Blvd.
Merritt Is., FL 32953 (407) 452-5736
- Jan. 28-30 **Greater Miami Shell Show**, N. Miami, FL
Bob Pace, 7405 S.W. 128th Court
Miami, FL 33183 (305) 386-3442
- Feb. 4-6 **Broward Shell Show**, Pompano Beach, FL
John Chessler, 7401 S.W. 7th St.
Plantation, FL 33317 (305) 791-5909
- Feb. 10-12 **Ft. Myers Festival of Shells**, Ft. Myers, FL
Edie Chippeaux, 1308 Biltmore Drive
Ft. Myers, FL 33901 (813) 936-4058
- Feb. 12-14 **Centennial Shell Show of Malacological Society of S. Australia**, Adelaide
Wayne Rumball, S. Australian Malacological Society
c/o Invertebrate Section, S. Australian Museum
North Terrace
Adelaide 5000, S.A., Australia (8) 381-3987
- Feb. 18-20 **Naples Shell Show**, Naples, FL
Gary Schmelz, 5575 12th Ave. S.W.
Naples, FL 33999 (813) 455-4984
- Feb. 18-20 **Sarasota Shell Show**, Sarasota, FL
Peggy Williams, P.O. Box 575
Talleavast, FL 34270 (813) 355-2291
- Feb. 19-20 **VII^{ème} Rencontres Internationales du Coquillage**, Paris, France
Gilbert Jaux, 3 rue Saint-Honore
78000 Versailles, France (1) 39-53-80-46
- Feb. 25-27 **St. Petersburg Shell Show**, Treasure Is., FL
Bob & Betty Lipe, 440 75th Avenue
St. Petersburg Beach, FL 33706 (813) 360-0586
- Mar. 3-6 **Sanibel Shell Show**, Sanibel, FL
Biddy Dean, 1801 Olde M. Gulf Dr., #C-D
Sanibel, FL 33957 (813) 472-9101
- Mar. 10-12 **Marco Is. Shell Club Show XI**, Marco Is., FL
Dr. Bill Reid, 976 Sundrop Court
Marco Island, FL 33937 (813) 394-6245
- Mar. 18-20 **Treasure Coast Shell Show**, Stuart, FL
Mrs. Edwin M. Fry, 1542 Jupiter Cove Dr., Apt 502
Jupiter, FL 33469 (407) 774-2502
- Apr. 8-10 **Georgia Shell Show**, Atlanta, GA
Mrs. Louise Compton, 4236 Lower Roswell Rd.
Marietta, GA 30068 (404) 971-2431
- Apr. 22-24 **St. Louis Shell Show**, St. Louis, MO
Vern Stubblefield, 8028 Orlando
St. Louis, MO 63105 (314) 863-5207
- May 7-8 **Fourth Belgium International Shell Show**, Aarschot, Belgium
R. De Roover
Vorsterslaan 7
2180 Ekeren-Donk, Belgium (3) 644-3429
- Jun. 18-19 **XIII^{ème} Salon International du Coquillage**, Lutry, Switzerland
Dr. Ted W. Baer, CH-1602 La Croix
Switzerland (21) 393771 or 207371

LETTERS

Just finished reading the *American Conchologist* and thank you for another interesting issue. Reading Barbara's (Barbara Elliott, COA Secretary) write-up of the Panama meeting. It brought back many happy memories — one of them was winning the *Chicoreus spectrum* in the raffle. It was a pleasant surprise! It's a beautiful shell.

Pat Burke

1745 SE 46th Lane #102
Cape Coral, FL 33904

Thanks for enlightening us, Pat! We wondered who won that beauty!

Occasionally, a book by a foreign author or one printed in a foreign country will be reviewed. However, the reviewer doesn't comment upon the language used. (I) would appreciate such information.

Thanks for an outstanding journal.

Walter A. Sunderland, M.D.

7610 N.E. Earlwood Road
Newberg, OR 97132

This letter is in response to the article "Are You a Pinhead" by Louis Brown (*AMCONCH* V. 20, No. 4, p. 23).

Mr. Brown contacted me right after the COA Convention in regards to club pins for the San Diego Shell Club which, at the time, were brand new.

At that time I informed him of the defunct **Sheller's Club of San Diego** and the existence of a pin issued by that club. In his article, Mr. Brown listed the club as the "San Diego Sheller's Club," I'm sure to make it fit alphabetically. But the actual name of the club was deliberately arranged "The Sheller's Club of San Diego" to avoid conflict or confusion with the San Diego Shell Club.

But that's not the point of this letter. The point is that I knew of the pin from the defunct club because I designed it. And as its designer, I retained a small number of the original (and only) lot issued. The pin features a Gold Ring Top (*Calliostoma annulatum* Lightfoot, 1786) on a white background with the club's name in the encircling border. The border, lettering, and all other lines are in gold....

Kim C. Hutsell**The Inland Sea**

2831 B. SW 29th Street
Topeka, KS 66614

We enjoyed Louis Brown's article about shell club pins, "Are You A Pinhead?" in the Dec. 1992 *American Conchologist*. We have displayed our own collection in three shell shows and at the Panama City COA convention last July. We have almost every pin on Louis' list and have added a few: The Gulf Coast Shell Club, The 1993 Suncoast Jamboree, and the St. Louis Shell Club.

We started out collecting about eight years ago when we bought Gary Magnotte's collection of about 45 pins, badges and certificates. Since then we have acquired the rest.

Many shell clubs in the U.S. have added shell club pins to the paraphernalia of saleable items, and collecting pins has become quite a hobby for us shell collectors. Some of the shell club pins on

Louis Brown's list have been defunct for many years, and, unfortunately, others are falling by the wayside, so to speak, and will be at a premium for future collectors.

Some of the defunct clubs have been reborn with a new name: the Mackay Shell Club in Australia became the Whitsunday Shell Club. Others are very hard to track down. The Bowen Shell Club mentioned in Louis' article remains elusive. Our Australian friends are trying to get us some information about the club, but so far, nobody has come up with anything.

If you want to start a pin collection or enlarge your present one, a good way to begin is to use Tom Rice's **Shellers Directory of Clubs, Books, Periodicals and Dealers**. The club section will tell you if a club has a pin, and sometimes it will tell you the price. Just write to the shell club in question, and enclose a check (be sure to add postage) and presto, you'll have another pin. (Some foreign clubs may have payment restrictions.) Good luck to all you Pinheads out there.

Ben & Josy Wiener

1165 NE 105 Street
Miami Shores, FL 33138

I was interested in your comments about the type size used by your printers, and agree that the latest issue is easier on the eye. It was quite a revelation to go back through previous issues and compare the earlier printing.

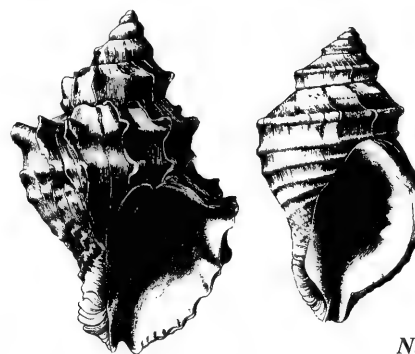
On the subject of the **Strandloper** [publication of the Conchological Society of Southern Africa], I understand that Olive Peel in Durban has decided to resign as editor and will be doing only one more issue. After that the new committee based in Pretoria will presumably have to make some decisions about the bulletin....

By the way, I note that in the article on "Lumpers and Splitters" on page 16 of your latest number [June], you refer to Laurie Smith as "she." "Laurie" is short for Laurence, so it should have been "he." Laurie is the Society's new secretary. He retired a year or so ago as curator of the national zoological gardens in Pretoria and is a longtime sheller.

David Freeman

41 Duncan Road, Sea Point
8001 Cape Town, South Africa

*We're sorry to hear about Olive Peel's resignation. Sadly, all things change. And of course "Laurie" should be "he." This editor grew up on **Little Women** and should have known better. Our apologies, Mr. Smith. And thank you, David, for your help.*

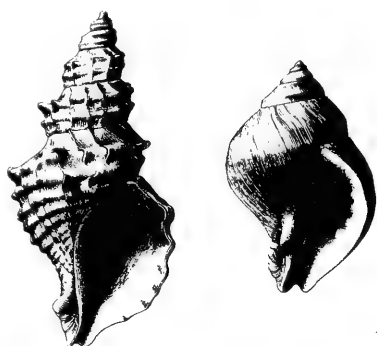


Nucella lamellosa

COA TROPHY HISTORY

The Florida winter and spring shell shows are fast approaching. When you're thinking about shell shows, please take a minute and send me any information you have on the COA Trophy. We **really** need **your** help. COA is trying to put together a "History of the COA Trophy." Any information you have would be greatly appreciated. We would like to know the name of the shell show, the date of the shell show, the winner of the COA Trophy, the name of the winning exhibit and any other pertinent information available. We would also like to have any pictures associated with the COA Trophy. If you can help, please send your information regarding the COA Trophy to:

Lucille Green
COA Historian
12307 Laneview Drive
Houston, TX 77070



Nucella lamellosa

OOPS!

Oops! Oops! and Double Oops! We have the wrong issue number on the cover of the September issue. It says "Vol. 21, No.2." It should read "Vol. 21, No. 3." All you members who want to know where Vol. 21, No. 3 is...you have it! All you members who want to know where your editor's mind has gone, join the club. I've been looking for it for weeks!

We neglected to mention that Jo Granda, longtime member of the Gulf Coast Shell Club, was the official Welcome Party photographer at the 1993 COA Convention in Panama City, and was ably assisted by Steve and Tammy Barry. Thanks for all those great photos, Jo. We did enjoy them.

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and there are many members who have not renewed for 1994. Please find your gold 1994 renewal form in your September issue and get it and your check in the mail. Walter has been processing payments for 1994 and would gladly see more coming in. Thanks to the members who added +4 to their zip code.

Enclosed in this issue is a yellow membership brochure with an application form. Give it to a friend, someone you think would enjoy COA. Or perhaps you would like to give a 1994 membership as a Christmas or birthday gift. Remember, **American Conchologist** is the best buy is shell collecting.

Start thinking about the '94 COA convention that will be in Corpus Christi, Texas. Find a cowboy boot or hat to start saving your spare change in for the auctions, raffles, bargain table and the BOURSE! Texas wants y'all to come.

Always glad to receive correspondence concerning membership, and thanks for your continuing support. Get those renewals coming in!

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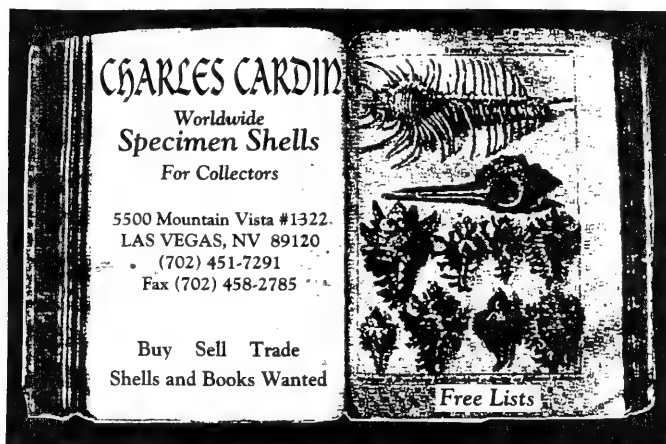


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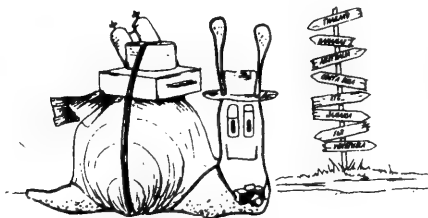
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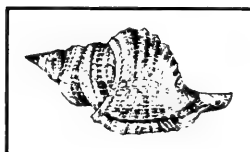


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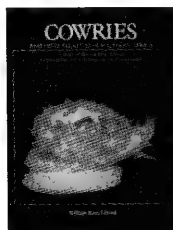
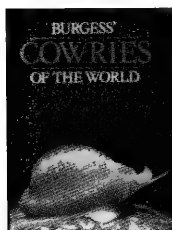
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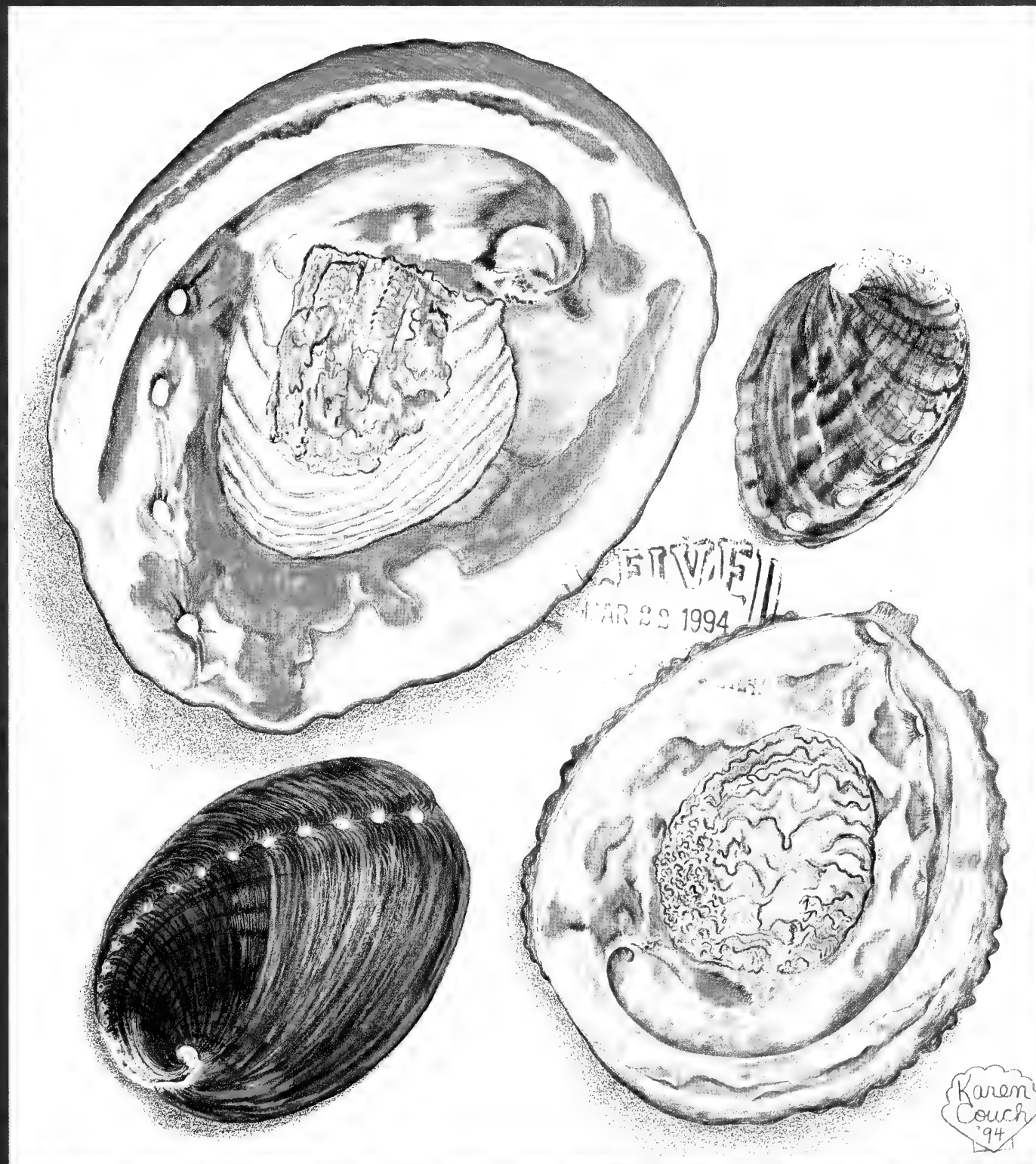
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AMERICAN CONCHOLOGIST

QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 22, NO. 1

MARCH 1994





In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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COVER:

Karen Couch, 2029 Joann, Newton, KS 67114-5118 is our March Cover Artist. Her depiction in colored pencil of some California abalones beautifully captures the elegant sweep of the abalone shell, their internal iridescence, as well as the external ruggedness characteristic of this group. The specimens, all from her own collection, are as follows: top left — *Haliotis rufescens* Swainson, 1822; top right — *H. kamschatkana* Jonas, 1845; bottom left — *H. cracherodii* Leach, 1814; and bottom right — *H. corrugata* Wood, 1828.

PRESIDENT'S MESSAGE

It's a small, small world!

Bob and I traveled extensively around the world as well as the US/Canada. Since his collecting interest was in stamps and mine, shells, our search for them led us to many interesting, and funny and exciting experiences.

One trip in particular, a five week trip to the Orient in 1987, took us from Japan throughout Asia, including Thailand. I found a shell shop listed in the Bangkok telephone directory, and off we went on another adventure.

We obtained directions and instructions on how to get back to the hotel from the bell captain. This was very important in a city where we didn't speak the language and where most citizens don't speak English. We had found, however, no matter where we went, that people were friendly and helpful. Sign language and pictures took the place of thousands of spoken words. These excursions, on our own, invariably gave us a view and insight into a country and its people that one can't get on the beaten path.

When we arrived at the Siam Shell Shop, we were greeted by two young girls with whom we could not communicate verbally. They seemed to understand why we were there, and with many smiles and giggles, indicated we should make ourselves at home. One returned in a few minutes with cold bottles of orange soda.

Shortly thereafter, a lovely Thai lady, the proprietor — Mrs. "Poo" Muangman — arrived. She spoke perfect English. We chatted and looked at shells. I made several selections and sat at her desk to write some Travelers Checks — and suddenly I realized I was looking at a picture of my dear friend, Tucker Abbott!

Tucker and Cecilia had visited with Mrs. Muangman and her husband in connection with a book Tucker was working on — **Shells of Southeast Asia** (published in 1991). Indeed it is small SMALL world after all!

DORIS

BLOW YOUR OWN HORN!

Have you ever won the COA Trophy? If you have, tell us about it. If you don't let us know, you may be left out. Take a moment to send us any information you may have on the COA Trophy. We really need your help. COA is trying to put together a "History of the COA Trophy." Any information you may have would be greatly appreciated. We would like to know the name of the shell show, the date of the shell show (especially the year of the shell show), the name of the winner, the name of the winning exhibit, and any other pertinent information available. We would also like any pictures associated with the COA Trophy. If you can help, please send your information regarding the COA Trophy to:

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We've heard that a stroke has felled COA member Dr. Byron Travis, a part of the Oregon Shell Club for over 20 years, and a collector for much longer than that. Dr. Travis is well known for his reflections on the hobby of shell collecting and the inspiration it has brought him in his life. Last we heard, Dr. Travis was recuperating very nicely. We hope that you are up and about and writing again soon, Dr. Travis.

PUT ALL YOUR EGGS IN ONE BASKET:

Reproductive Strategies Exhibited by Species Represented in Gunnar Thorson's World-wide Collection of Marine Prosobranch Egg Capsules

by Charles N. D'Asaro

Gunnar Thorson, a distinguished Danish marine biologist, studied benthic marine invertebrates, especially prosobranchs and their reproductive activities, for more than 40 years. With the intention of preparing a monograph on prosobranch reproduction, he assembled an exceptional museum collection of the often intricately-structured egg capsules produced by these mollusks. Although Thorson's diverse activities in a lifetime of accomplishment did not leave enough time to complete the task (see Lemche, 1971), his extant collection, including thousands of specimens and hundreds of exceptionally fine illustrations, represents a unique and valuable resource, housed in the Zoological Museum of the University of Copenhagen.

I have had the privilege of using the Thorson Collection to complete a small portion of what was envisioned as a series of papers on the spawns of several neogastropod families, including Muricidae and Nassariidae (D'Asaro 1991; 1993), the latter with support from the Conchologists of America. Reports on Buccinidae, Fasciolaridae, and Melongenidae are being prepared. Thorson's collection provides a permanent repository from which atlases of prosobranch reproductive products can be prepared without destroying spawns from existing populations. It also serves as a limited source of information on specific reproductive activities occurring during spawning. Such information can be of value at a time when so many species with unknown reproductive strategies are threatened by human activity in coastal habitats. What follows is a brief review of how and why marine prosobranchs build packages for their embryos, referring in large measure to species in four of the five neogastropod families previously mentioned that are represented in Thorson's collection.

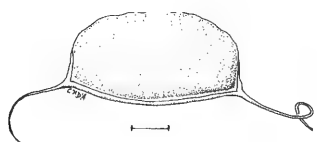


Figure 1. *Bullia melanoides* (Deshayes) from southern India. Egg capsule with filaments used to hold a group of similar structures on the ventral surface of the foot (bar = 1 mm).

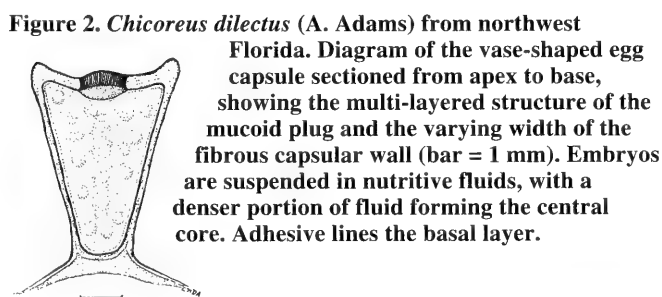
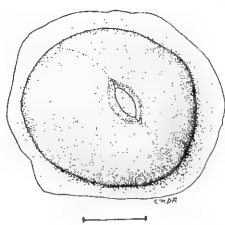


Figure 2. *Chicoreus dilectus* (A. Adams) from northwest Florida. Diagram of the vase-shaped egg capsule sectioned from apex to base, showing the multi-layered structure of the mucoid plug and the varying width of the fibrous capsular wall (bar = 1 mm). Embryos are suspended in nutritive fluids, with a denser portion of fluid forming the central core. Adhesive lines the basal layer.

Figure 3. *Bedevea birileffi* (Lischke) from southern Japan. Blister-shaped egg capsule showing sutures on opposite sides of the aperture, which reflect the two-lobed structure of the pallial capsule gland (bar = 1 mm). Note similarities with the nassariid capsule in Figure 6.



Prosobranch Egg Capsules and the Bird's Egg

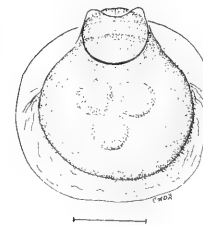
On first examination, egg capsules of marine prosobranchs, especially neogastropods, appear to have little in common with the avian capsule that most people call an egg; however, there are interesting analogies in structure and function. Both types of encapsulations result from equivalent biological requirements to produce and protect young. A quick comparison between avian and neogastropod "eggs" demonstrates what this means. One should remember in both cases that the encapsulations actually contain developing embryos. Placement of sperm in the reproductive tract is the first priority. A bird's ovum (yolk of the "egg") is fertilized in the upper oviduct, the layers of nutritive fluids, protective membranes, and a complex calcified shell are added sequentially in the oviduct before the "egg" is deposited in a nest and incubation by a parent begins. Neogastropods follow the same path initially. Fertilization occurs in the upper oviduct, then an albumen gland envelops developing ova with nutritive fluids, and finally encapsulation with highly refractory (decay resistant), fibrous layers occurs in a two-lobed capsule gland located in the pallial portion of the oviduct. Then the spawning mollusk uses its foot (and sometimes a specialized gland in the foot) to harden these soft capsules and attach them, often in a specific location, before abandoning them.

Differences between the two encapsulation processes are immediately obvious. Neogastropods frequently put more than one embryo in their package; these hatch through a preformed aperture as veliger larvae or as juveniles. The pedal-molding process offers great potential for species-specific variation in shape. Because incubation or brooding is an unusual procedure in neogastropod families, special measures for anchoring and for protection of egg capsules and their contents are required. All of these differences have contributed to the evolution of a surprising range of complex survival strategies. We can start this survey of those strategies by examining the least common examples first.

Protection of Egg Capsules by Brooding

Few mobile neogastropod species brood egg capsules. Evolution of that strategy in some species could be related to a need to find ways to attach egg capsules securely in habitats predominated by shifting sand and mud. In such situations, the most direct way a female can prevent encapsulated embryos from being buried or eaten is to keep them in or on her body. This may be why brooding, as a protective strategy, is encountered so often in nassariids, especially dorsanines. These inhabitants of soft substrata brood encapsulated embryos in the oviduct, on the ventral foot, or near the aperture of the shell. A spectacular example, *Bullia melanoides* (Deshayes), employs unique capsules with filaments that become entangled with those of other capsules, enabling the female to hold a mass of spawn on her foot, even while remaining mobile in the surf zone (Ansell & Trevallion 1970) (Fig.1).

Figure 4. *Nassarius acutus* (Say) from Texas. Egg capsule with a broad basal layer and a raised mucoid plug bisected by a ridged suture (bar = 0.25 mm).



PUT ALL YOUR EGGS IN ONE BASKET (Continued from previous page)

Protection of Abandoned Egg Capsules:

Excepting brooding, protective strategies for most neogastropods require attachment of capsules to an object in the environment. This step involves choosing a site with physical features which are compatible with the method of attachment (adhesive or anchor) and which can, in some cases, provide the security of camouflage or a physical barrier to predators and/or adverse environmental conditions. The foot gives final shape and sculpture to egg envelopes and the egg mass. These physical features provided in the last step of the spawning process are intimately associated with survival of the next generation.

Some protective strategies neogastropods employ during spawning are immediately evident or can be inferred upon examination of preserved capsules in the Thorson Collection. Others require observation in the field to be recognized or confirmed. Specific survival-enhancing strategies which have been identified include forming thick, refractory capsular walls, hiding spawn in crypts or camouflaged sites, placing spawns in communal masses, using shapes or sculpture to form protective barriers, and adapting capsules (sterile or without embryos) as anchors or protective barriers. These activities often result in species-specific products.

•Fibrous and Refractory Capsular Walls

The first line of defense for all encapsulated neogastropod embryos is the tough, fibrous capsular wall. For example, the wall of a *Chicoreus dilectus* (A. Adams) capsule typically has four layers: a thin, innermost one containing nutritive fluids and embryos, and three layers forming the protective component (Fig. 2). The inner part of the protective wall is continuous with a layered plug of mucus (D'Asaro 1988) that will be dislodged at a precise



Figure 5. *Nassarius corniculus* (Olivi) from southern Italy. Goblet-shaped egg capsule with a broad mucoid plug bisected by a suture (bar = 0.5 mm).

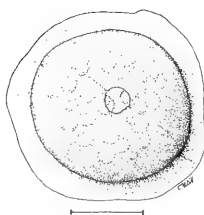
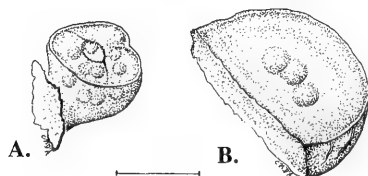


Figure 6. *Nassarius pauperatus* (Lamarck) from southern Australia. Blister-shaped egg capsule similar in shape to the muricid capsule in Figure 3 (bar = 0.5 mm).

Figure 7. Egg capsules of two muricids from northwest Florida, usually found attached on the sides of holes or crevices (bar = 2 mm).

A. *Favartia cellulosa* (Conrad). B. *Calotrophon ostrearum* (Conrad), which prefers to position its capsules between the egg capsules of other neogastropods.



point relative to development when a hatching substance is released by the embryos (Sullivan & Bonar 1984). Initially, microscopic predators cannot enter unbroken capsules, and the contents (for some species) have been shown to be bacteria-free (Lord 1986). Cross-linked fibers of structural protein in the capsular wall have remarkable ability to resist decomposition (Goldsmith et al. 1978), remaining intact far beyond the time required for enclosed embryos to reach the hatching stage. On the east coast of North America, encapsulations created by *Busycon* spp. in the spring are often seen, battered but still identifiable to species, at the end of the summer.

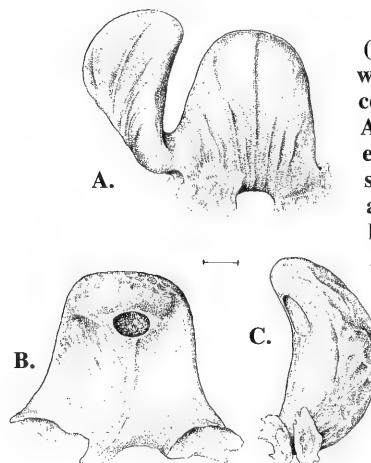
Because numerous neogastropod species, including many buccinids, muricids, and nassarids, get enough protection for their embryos from the tough capsule alone, these species have not evolved elaborate sculpture. Their encapsulations are simple, frequently non-species-specific, blister-shaped structures or unornamented upright packages that are not formed to fit close together. Females deposit single structures or small groups at diverse localities almost daily during the breeding season. Species with non-specific capsules often make no obvious effort to hide their spawn. An important spawning stimulus can be availability of sites not already covered by sessile organisms. Examples of simple encapsulation are those produced by *Bedevea birileffi* (Lischke) (Fig. 3), *Nassarius acutus* (Say) (Fig. 4), *N. corniculus* (Olivi) (Fig. 5), and *N. pauperatus* (Lamarck) (Fig. 6).

•Cryptic Placement of Egg Capsules

If a habitat harbors specialized predators that target spawn, random placement of egg capsules without regard to the predators will result in declining survival. There exist many examples of cryptic neogastropod spawning related to defeating predators. Sheltered sites, either created or opportunistic, involving plants, animals, shells, rocks, arthropod exoskeletons, or even beverage containers (clean surfaces), are employed, sometimes preferentially and with great specificity. Where few sheltered sites exist (sand or mud habitats), it is not unusual to see spawns from females representing three or four families arranged side by side in the best locations, e.g., gaping bivalve shells. Shape of the capsule may facilitate placement in a shelter. *Favartia cellulosa* (Conrad) capsules are cemented to the sides of narrow cavities that are vertical to the axis of the spawner's foot (Fig. 7A). Consequently, following attachment on a vertical surface the hardened capsule has an L-shape with the capsular aperture positioned toward the opening of the cavity.

Figure 8. Tongue-shaped egg capsules of *Phyllonotus pomum* (Gmelin) from southern Florida, which are deposited in large communal masses (bar = 2mm).

A. Side of the capsule normally encountered by a spawner, showing how capsules are attached to bridge the gap between two already in place. B. Apical view. C. Side view. These illustrations, which are unsigned, and others prepared with a crow-quill pen that follow, are examples of hundreds of fine, line-and-stipple drawings in the Thorson Collection.



An interesting and surprisingly hazardous use of the cryptic strategy is employed by female *Calotrophon ostrearum* (Conrad), which preferentially place bracket-shaped capsules with wide unprotected mucoid plugs (Fig. 7B) between newly deposited egg capsules of larger neogastropods such as *Busycon* and *Fasciolaria* spp. The intercapsular spaces of the host's capsules are lined by expanded ridges on adjacent capsules that resist deformation and create a coherent mass (Figs. 16 & 19). Consequently, protection to its embryos conveyed by the ridged capsules of the much larger host appears to provide a collateral advantage to *Calotrophon* spawns positioned in the intercapsular spaces. Furthermore, on newly deposited host-spawn, *Calotrophon* finds clean surfaces requiring little energy for preparation. The surprise is that this strategy requires *Calotrophon* to locate and spawn on freshly deposited egg masses of species that are usually its predators! Individuals of both sexes begin to inspect host-spawn while the predator is still in spawning or in the immediate vicinity. Occasionally the host recognizes the presence of its prey, interrupts its own reproductive activity, captures and consumes the smaller snail (an event that requires hours), and then resumes spawning (pers. com., L. Dillmore, University of West Florida).

•Communal Spawning Strategies

Communal spawning events may bring many individuals of both sexes together and offer protective advantages conferred by proximity and size of spawn, as well as provision of clean substratum. *Bolinus* spp. and *Phyllonotus* spp. provide obvious examples. Aggregation initiates a spawning frenzy, resulting in many females of a species cementing tongue-shaped capsules (Fig. 8) into a common egg mass. Although it may be hard to imagine these animals engaging in frenetic activity, in terms of their normal behavior, frenetic it is. Females attach capsules on any hard object in the immediate vicinity. Less active animals in aggregations will have many egg capsules deposited on their shells, and they will be tethered or even imprisoned in the growing communal structure if spawn on their shell is linked to the whole. Mounds 50 cm wide and 20 cm. high containing the encapsulations of more than 20 females are constructed by *Phyllonotus pomum* (Gmelin). These massive communal structures are anchored on seagrasses, bivalves, or rocks and, by their sheer size and refractory nature, they convey protection to embryos in the interior. Large crustaceans and fishes easily shred capsules on the surface, but the interlocking nature of

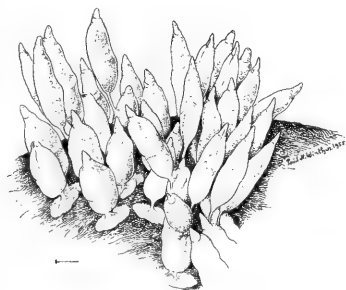
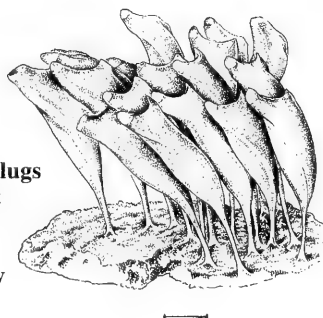


Figure 10. A mass of *Eupleura caudata* (Say) egg capsules with protruding mucoid plugs from Delaware (bar = 2 mm). Missing plugs on several capsules indicating that hatching was underway when the specimen was collected. This unsigned illustration was probably drawn by Gunnar Thorson.

Figure 9. A mass of Californian *Acanthina* sp. egg capsules with protruding mucoid plugs (bar = 2 mm). This illustration from the Thorson Collection was prepared by Poul Winther.

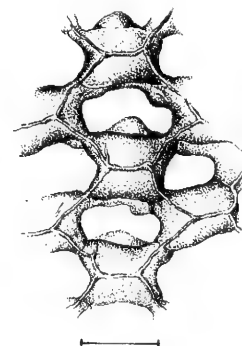


the capsules (Fig. 8A) insures that fragments of fractured capsules in the outer ranks remain to provide a barrier that requires the predator to expend increasing energy for decreasing reward. A disadvantage of this communal activity is evident when the largest masses in shallow water are dislodged by storms and stranded on the shore.

•Strategies Associated with Capsular Shape or Structure:

Expanded or Shielded Mucoid Plugs.—Individual encapsulations of neogastropods can provide protection to embryos by having specific structural features, shapes, or sculpture. Most capsules have escape apertures with mucoid plugs that are inherently weaker than the fibrous walls; consequently, one assumes selection would favor strengthened or shielded plugs. A thickened plug would remain sensitive to hatching substances while providing a more effective barrier. The shape of the plug could even prevent the aperture from being completely covered when capsules are attached to each other. Expanded or shielded mucoid plugs occur frequently in Muricidae. Species of *Acanthina* (Fig. 9) and *Eupleura* (Fig. 10) build stalked, cylindrical capsules with greatly thickened, protrusive plugs at the apex. The largest plugs occur in capsules of species with direct development to a juvenile stage prior to hatching. In some cases such juveniles can hatch by using the radula to cut a hole in the plug or the capsular wall. In contrast, *Murex* spp. provide examples of mucoid plugs shielded on the interior of complex, purposefully constructed masses. To achieve this, the females of several Indo-Pacific species initially attach small, somewhat columnar sterile capsules side by side in a circular pattern on a stable, hard substratum. Next, inclined, L-shaped, embryo-containing capsules are positioned on top of the basement rank, bridging gaps between them. The "L-shape" causes all plugged capsules to face the center of the circular structure. As more capsules are added in a helical pattern on the inclined sides of earlier ranks, a curving tubular mass with porous walls is created. The last capsules deposited close the end of the tubular mass, often more than 10 cm long. In the egg mass created by *Murex trapa* (Röding), external surfaces are reinforced with ridges (Fig. 11), while internal portions around the mucoid plug have thinner walls with little sculpture. Species building tubular or cylindrical masses, including *Murex carbonnieri* Jousseaume, often display the added feature of communal spawning, producing dense aggregations of 10 or 20 cylinders. Certain nassariids provide significant contrast to the expanded or protected plugs of muricid species. Capsules of *Nassarius livescens* (Philippi) and *N. sufflatus* (Gould) have no visible escape aperture or mucoid plug. All that remains along the apical ridge of the somewhat triangular structure is an invisible seam, apparently sensitive to hatching substances, that opens when the young are ready to hatch.

Figure 11. An unsigned illustration, probably by Gunnar Thorson, of a portion of the tubular egg mass of *Murex trapa* (Röding) from the South China Sea (bar = 3 mm). External surfaces of capsules are thickened and have an interconnected network of ridges.



Leaving an Escape Route in an egg Mass — Distinctive shape and sculpture can contribute to reproductive success by preventing a neogastropod from imprisoning its own embryos during the spawning process. Some species are very quick to deposit capsules on all surfaces of any gastropod spawn except their own, while others always produce layered or communal masses. Avoidance of conspecific spawn apparently insures that added layers of capsules will not cover mucoid plugs in escape apertures, preventing larvae or juveniles from hatching at a critical point in development. Species that build layered or communal structures appear to use capsular shape and sculpture as signposts to avoid obstructing the hatching mechanism. Obvious examples of the former are the tongue-shaped capsules of *Phyllonotus pomum*, previously mentioned, which have the aperture projecting toward the interior of the mass; consequently, added capsules rarely contact a mucoid plug (Fig. 8). Embryos of a communal spawner in capsules with a terminal aperture and a flat mucoid plug

Figure 12. Spiny projections around the aperture of *Nassarius trivittatus* (Say) egg capsules from Massachusetts apparently deter the spawner and other members of the same species from blocking escape apertures with the bases of added layers of capsules (bar = 0.5 mm).

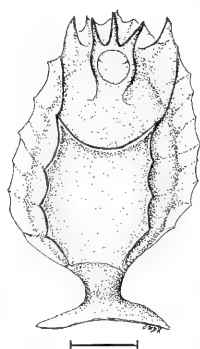


Figure 13. *Nassarius fossatus* (Gould) from California constructs multilayered spawn with rows of egg capsules having this shape (bar = 1 mm). New ranks are usually added directly to the apexes of capsules already in place, but escape apertures are not blocked because pressure of the foot on apical spines causes apertures to be pushed toward adjacent capsules. If contact between adjacent capsules occurs, horizontal ridges on one side of each capsule prevent obstruction of apertures by forming convenient intercapsular channels through which veligers escape.

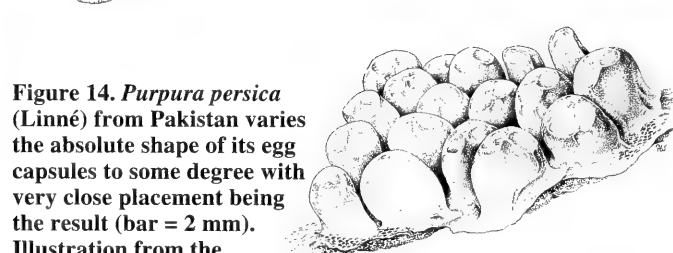


Figure 14. *Purpura persica* (Linné) from Pakistan varies the absolute shape of its egg capsules to some degree with very close placement being the result (bar = 2 mm). Illustration from the Thorson Collection by Poul Winther.

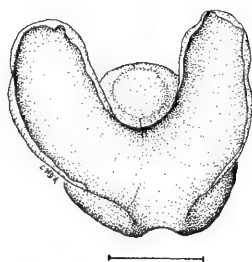


Figure 15. *Nucella cingulata* (Linné) from South Africa has vase-shaped egg capsules with wing-like apical ridges (bar = 2 mm). In the intact mass, these ridges provide protection by covering spaces between capsules, but do not obstruct the mucoid plugs.

are exposed to potential disaster unless some mechanism exists to provide guidance for the spawner's foot. Many nassarids that produce layered, communal egg masses have capsules that are highly sculpted and spiny, especially around the aperture. The spines appear to direct the foot of a spawner away from the aperture. For *Nassarius obsoletus* (Say) or *N. trivittatus* (Say), which have similar wreaths of spines around the aperture (Fig. 12), nearly all capsules in an upper rank of a mass have their point of attachment on the sides of capsules in lower ranks, rather than on the apical parts that the spawner's propodium would first have encountered.

In contrast, some communally spawning nassarids make no attempt to avoid apertures in lower ranks of capsules because they appear to have passive mechanisms that prevent obstruction. *Nassarius fossatus* (Gould), which produces massive communal egg masses, has a capsule with a terminal but slightly offset aperture surrounded by spines. When adding layers to a mass of its own spawn, or that of another individual, this species nearly always attaches capsules directly to the apexes of those in lower ranks. There is no interference with hatching because the pressure of the spawner on the terminal spines apparently causes the apical portion of each capsule containing the mucoid-filled aperture to bend and touch the side of an adjacent capsule. Horizontal ridges below each aperture insure that laterally directed spaces are created when the capsules touch, providing channels through which hatching veligers can escape (Fig. 13). Although these nassarids may use capsular spines to fend off some predators, in all cases those structures appear to have greater importance in protecting the species from itself.

Aggregation of Egg Capsules as a Protective Strategy —

Egg capsules can be placed close together in a mass simply for convenience, but any accumulation of potential resources is an invitation to predators that requires countermeasures. Aggregation may be successful as a strategy because it allows a species to spend energy to armor only the outward facing surfaces of clustered capsules in a manner that increases survival. Associated strategies involve increased compaction, and restriction of access to intercapsular spaces. *Chicoreus* spp. and numerous other muricids produce upright capsules with thickened, ridged apical plates and thin-walled concave and convex sides, allowing very close placement (Fig. 2). *Purpura persica* (Linné) and *Dicathais lacunosa* (Bruguère), which have apical armor, take the next step and alter

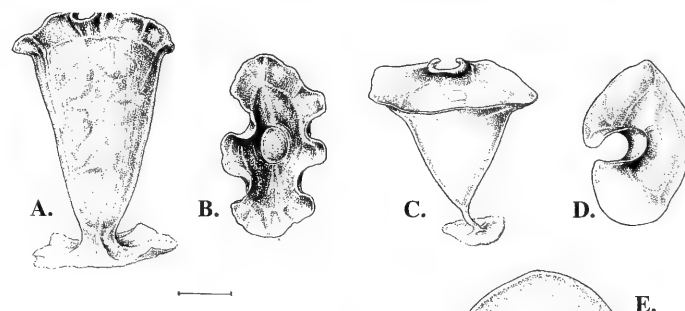


Figure 16. Species of *Fasciolaria* have vase-shaped egg capsules with armored apical ridges partially or completely overlapping intercapsular spaces. A. Illustration from the Thorson Collection by Poul Winther showing *F. tulipa* (Linné) capsules from southern Florida (bar = 1 cm). B. Illustration by Poul Winther of *F. lilium* (G. Fischer) capsules from North Carolina (bar = 1 cm). C. Apex of a vase-shaped *F. salmo* (Wood) capsule from western Panama (bar = 4 mm).

the absolute shape of individual capsules to allow even closer proximity in all circumstances (Fig. 14). A successful shielding strategy, which has evolved several times in different families, limits access to the intercapsular spaces by covering those areas with flaring portions of adjacent capsules. Two muricids, *Nucella cingulata* (Linné) and *N. dubia* (Krauss) have wing-like structures overlapping intercapsular spaces, which apparently serve this purpose (Fig. 15). Evolutionary trends in the same direction are seen in Fasciariidae. As shown in Figure 16, *Fasciolaria tulipa* (Linné) has close-fitting, crenulated apical ridges on both sides, *F. lilium* (G. Fischer) forms a pair of partially overlapping ridges on one side, while *F. salmo* (Wood) has even larger wing-like structures that severely restrict access to intercapsular spaces. For *F. salmo* spawn, the ultimate result is a dome-shaped egg mass with an outer surface resembling the scales of a fish.

Certain nassariids also use the flaring ridge strategy to reduce access to the intercapsular space, to which they add protection at the periphery of the mass. *Nassarius perpinguis* (Hinds) deposits straight rows of upright discoidal capsules with their broad sides in contact. A flaring apical ridge on each capsule overlaps the adjacent capsule except near the aperture where the veligers will exit (Fig. 17). Exposed apical and lateral surfaces are thickened and armored with spiny ridges, while side walls facing the intercapsular spaces are exceptionally thin. The overlap and spines present a barricade except at the ends of the row where the thin side-walls are exposed. At one or both ends of the row, barriers are created simply by deposition of somewhat smaller sterile capsules.

•Selection of Surface for Spawning

Although a few neogastropod species do release unattached egg capsules that can move with water currents, e.g., *Oliva sayana* Ravenel, nearly all species permanently anchor their spawns in some way. Clearing and cleaning of the surfaces with the radula before spawning have been observed in nassariids (MacGinitie 1931) and the other families under consideration. Avoidance of surfaces that interfere with adhesives (surfaces with mucoids or loose particles) occurs, for example, *Nassarius reticulatus* (Linné) prefers to attach capsules to red algae rather than mucus-covered brown algae (Barnett et al. 1980). Use of unstable surfaces or particulate substrata presents challenges surmounted with a range of strategies. When spawning *Dorsanum miran* (Bruguère) females encounter loose particles on a substratum, they apparently change the shape of the egg capsule from one with a long, narrow stalk and a small basal layer (Fig. 18) to a structure with no stalk and the widest possible basal layer. Subsequently, long-stalked capsules with narrow bases are attached in series to the more effectively anchored ones already in place, creating a mass composed of intertwined strands of capsules.

Soft particulate substrata can be used during spawning if an anchor can be found or constructed. Some melongenids, including *Busycon* spp., employ modified sterile capsules to serve as an-

chors. After burrowing deep into a sandy substratum, *Busycon contrarium* (Conrad) starts the process by attaching a single modified capsule on an object often too small to serve as an effective anchor (pers. com., L. Dilmore). Then irregular, widely spaced capsules are cemented together, basal layer to basal layer, to form an elongated anchor projecting toward the surface of the sand. As capsules are added, the female rotates in place until her aperture is near the sand surface, and then attaches the much more closely spaced capsules containing embryos to each other so that the fused basal layers (Fig. 19) form a spiraling cord or string. The product is so effectively moored in the sand that it usually cannot be dislodged unless the fused layers of the anchor are fractured.

The strategies mentioned here, which contribute to reproductive success, are a small sample of those known (in the literature or the Thorson collection) and an even smaller sample of those remaining to be discovered. The majority seem to contradict the old adage about the danger of placing all of one's eggs in the same basket. Obviously neogastropods have evolved effective means to make that choice successful.

Department of Ecology and Evolutionary Biology, University of West Florida, Pensacola, FL 32514.

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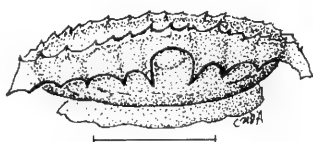


Figure 17. Apical view of a discoidal egg capsule of *Nassarius perpinguis* (Hinds) from California. These are placed in very compact rows with the spiny, armored apical ridge on one side of each capsule overlapping a lower spiny ridge on the adjacent capsule (bar = 1 mm). To produce an enveloping protective barrier, a capsule without embryos is deposited at one or both ends of a row.

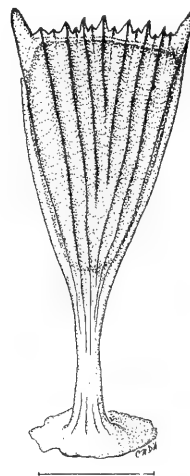


Figure 18. *Dorsanum miran* (Bruguère) from Senegal can change the shape of egg capsules, from the stalked structure shown here to one with a wider base and no stalk (bar = 1 mm).

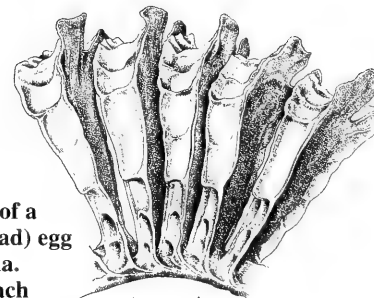


Figure 19. Middle portion of a *Busycon contrarium* (Conrad) egg mass from southern Florida. Members of this genus attach armored, discoidal egg capsules together basally to form spiraling structures anchored in the sand by segments of highly modified capsules without embryos.

A CANCELLARIID FROM THE SOLOMONS: *TRIGONOSTOMA ANTIQUATUM* (HINDS, 1843)

by Gene Everson

For two weeks in June, 1993, I was privileged to collect shells in the Solomon Islands with Brian Bailey on his boat *Wyuna*, and with the infamous collectors Wayne Harland of Pompano Beach, Florida, and Peter Clarkson of Port Lincoln, South Australia. On the night of June 4, during a full lunar eclipse, while diving off Ranadi, Guadalcanal in 65-75' on a silty sand slope in a strong current, I found a 13.3mm specimen of a cancellariid which we could not identify with our on-board shell books.

When I returned home and consulted my Cancellariidae references, the best ID I could come up with was *Trigonostoma antiquatum* (Hinds, 1843), an ID of which I was not at all sure. The two illustrations I found were in Kaicher's Card Pack #19, card #1915, and in Abbott's *Compendium of Seashells*, p. 229. Both references showed a shell with a higher spire than mine, gave the habitat as offshore in rather deep water, and listed the species as rare.

My next step was to mail the shell to the always helpful Richard Petit, who is an authority on Cancellariidae, with the questions: "Is my lower-spired shell an immature specimen, or perhaps a Solomon Islands form, or some other species?"

Dick's answer was that my shell was indeed *Trigonostoma antiquatum* and he went on to say that it "is a very fine and rare shell. *T. antiquatum* is very rare in collections and I know of no specimens (other than yours) in the USA. I do not have a specimen nor does the United States National Museum. Your specimen appeared to me to be adult." My two illustrations showed specimens of *T. thysthlon* Petit & Harasewych, 1987, a species which has been confused with *T. antiquatum*. Petit explained that "*T. thysthlon* is rare but is present in many collections as they were obtained not only by Japanese fishermen, but by Philippine trap nets."

Figure 1 is my Solomons Island specimen of *T. antiquatum* (photo by Richard Goldberg). *T. thysthlon* was described in *The Veliger* 30(1): 76-81 (July 1, 1987) and was compared and figured

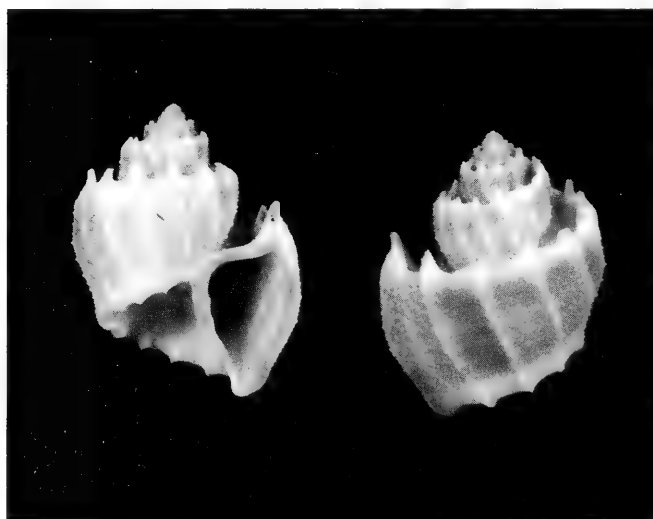


Fig. 1

with *T. antiquatum* and *T. scalare* (Gmelin, 1791). *T. scalare* is often illustrated as *T. pellucida* (Perry, 1811), a synonym. Fig. 2 is the lectotype of *T. antiquatum*, Fig. 3 is the holotype of *T. thysthlon* and Fig. 4 is *T. scalare*. Figures 2, 3 and 4 are from the aforementioned Veliger article, "The Indo-West Pacific Species of the Genus *Trigonostoma* sensu stricto (Gastropoda: Cancellariidae)." The lectotype of *T. antiquatum* was illustrated there for the first time photographically. *T. antiquatum* ranges along the northern Indian Ocean to New Guinea, with Hugh Cuming's Philippine locales being suspect, and we can now extend its range eastward to the Solomons.

*500 Nottingham Parkway, Louisville, KY 40222

REFERENCE:

Petit, R.E. and M.G. Harasewych. 1987. The Indo-West Pacific Species of the Genus *Trigonostoma* sensu stricto (Gastropoda: Cancellariidae). *Veliger* 30(1):76-81.

Fig. 2

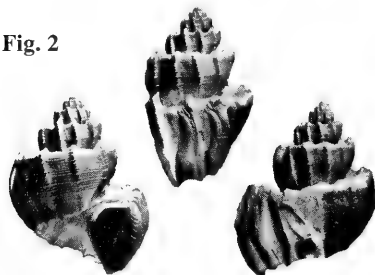


Fig. 3

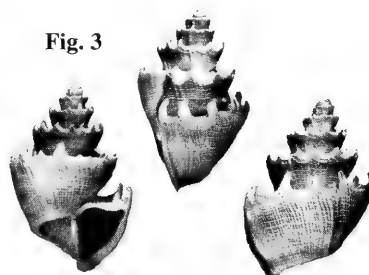
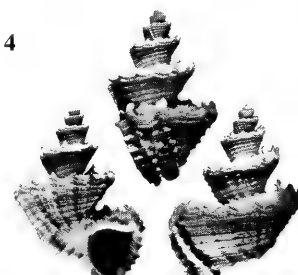


Fig. 4



PACIFIC SHELL CLUB TO HOLD FIRST SHELL SHOW

by Dave Nesheim, President, Pacific Shell Club



After a long absence of shell shows in California, we are glad to announce the first shell show to be sponsored by the Pacific Shell Club, a group whose membership includes many shell collectors in the Los Angeles area. Our club is very excited about this event and is looking forward to welcoming the participants from far and near. The show will be held on Sunday, May 1st, 1994 at the Cabrillo Marina Community Building in San Pedro. This waterfront facility, adjacent to the marina, provides a pleasant and relaxed atmosphere.

The shell show rules are being drawn up; they will include

numerous categories for which awards will be given, including the COA and DuPont trophies. There will be dealers. Plans are underway to assure that all visitors to our show will have an enjoyable time. I would like to extend my personal invitation to all shell collectors, especially those belonging to the shell clubs in Santa Barbara, San Diego, Long Beach and other southland communities. Hopefully, this will be the first of many shows to come in the future years. For further information, please contact our shell show chairman, Frank Jewett, at 1739 Vallecito Drive, San Pedro, CA 90732. Telephone (310) 514-8012.

LETTERS

I'm very sorry to tell you that Stu Lillico (Hawaiian shell collector and editor of **Hawaiian Shell News** for many years — see **American Conchologist**, June 1993) passed away at his home Dec. 18. He had been fighting cancer for several months but never gave up and even attended (H.M.S.) meetings in November. But in Dec., he just couldn't walk anymore. He was scattered at sea near where he lived. Many, many friends attended the shoreside services and a flotilla of 5 boats took people laden with beautiful flower leis to throw into the ocean with his ashes. We will sorely miss him....

Olive Schoenberg
3265 Huelani Drive
Honolulu, HI 96822

The "unnamed turrid" accompanying Don Shasky's article in the current (Sept. 1994) **AC** issue is *Plagiostropha opalus* (Reeve, 1845). I have it from the Fijis. Reeve cited it from the Philippines (Cumming's material, of course), and Cernohorsky (**Tropical Pacific Marine Shells**, 1978, pg.153) says it is found in the tropical Indo-Pacific, subtidal, and uncommon. Some workers would not synonymize *P. ebur* (Reeve, 1845) with this as Cernohorsky does. It's a pretty little shell of unusual shape.

Donn L. Tippet
10281 Gainsborough Rd.
Potomac, MD 20854

Richard Squires, COA member and grant recipient, contributor to American Conchologist, and Professor of Paleontology at California State University, Northridge, California, wrote recently, telling about the damage to the campus. The earthquake may be past, but the difficulties of the Los Angeles area and those who live there are still very real and pressing.

...(California State University) CSUN was essentially at the epicenter (ground zero). The campus was really hit hard. We still cannot go into our offices to clean up the mess, nor can we use our classrooms. School was delayed two weeks, and we start again on the 14th of February. Classes will be held in 400 mobile classrooms (trailers brought in from several states). My home, about 25 miles away, received several thousand dollars damage. I have experienced earthquakes before, but nothing has been like the one on Jan. 17. There was a tremendous amount of vertical movement (in places almost 2 G's — anything greater than 1 G and you are airborne)....

Richard Squires
26800 Espuma Drive
Saugus, CA 91350

CHANGES TO COA BYLAWS, PROPOSED AND APPROVED

At the 1993 Annual Meeting of COA in Panama City, the following addition approved by the Board of Directors was further approved by the membership at the meeting. All members should add this additional section to Chapter 5 of their copy of the Bylaws:

Chapter 5: VACANCIES

Add: Sec. D. In the event the Immediate Past President is unable or declines to serve on the Executive Committee, the next preceding Past President available will fill the position.

In Memoriam

Marion Ruth Magee

1918 — 1993

Marion Magee, well-known shell collector, exhibitor and bastion of the Indianapolis Shell Club, died on December 24. According to the executrix of her estate, Diane M. Childers, Marion suffered a series of complications initially resulting from a fall from a ladder while trimming a tree in October, 1992. Marion loved the nature, and most of her hobbies involved the out-of-doors: gardening, camping, hiking, and shell collecting. Writes Ms. Childers, "Even with her injury and health problems she was able to enjoy her outdoor gardening somewhat (with the help of a young friend)."

She also loved working with children, especially blind and otherwise disadvantaged children. In this interest, she took degrees in physical therapy and education from the Posse School, Boston University and Smith College, going on to become a nationally recognized figure in the field of physical therapy, working in Massachusetts, Hawaii and finally the Indianapolis area. Here she was employed at the Riley Childrens Hospital and the Indiana School for the Blind, and was Associate Professor of Physical Therapy at the Indiana University School of Medicine.

But it is as a shell collector that Marion was best known to us. She exhibited her beloved shells all over the eastern half of the United States, and won, at one time or another, nearly every award on the circuit. Marion was passionately interested in teaching others about mollusks. Her exhibits were always educational in intent, and for many years she was the editor of *The Slit Shell*, the education-directed newsletter of the Indianapolis Shell Club. Marion touched and thereby enriched the lives of many people with her, generosity, her enthusiasm for education and her lively intelligence. We will all be the poorer with her passing.

Our sympathies go out to Helen Paul on the Dec. 10 death of her husband, Robert. Helen is a COA member from Long Island Shell Club and Co-Chair for the 1991 COA Convention in Long Island.

**Seashell store for sale, 18 years, all cash, no agents. Contact
P.O. Box 91363,
San Diego, CA 92169.**

At the January meeting of the Board of Directors, there were three recommended changes to the Bylaws; however, the Board approved only one which will next have to be approved by the membership at the 1994 Annual Meeting in Corpus Christi, Texas. The recommended change is as follows:

Chapter 3: ELECTION OF OFFICERS

Delete Sec. D. Add new wording.

Sec. D. The election shall be conducted in accordance with Robert's Rules of Order.

THE COLOR OF SHELLS

by Amy Lyn Edwards

Molluscs exhibit all the colors of the rainbow, both in their shells and in their body pigmentation. They have been likened to a living canvas, stretched and painted by nature. Where does this rainbow of colors come from? To begin with, we need to understand what causes colors. We see objects by the light that they reflect back to us. The color we perceive results from the selective absorbance of the light that penetrates an object's surface. When light hits an object, some of it is reflected, refracted, interfered with or absorbed by the object. The wavelengths of unabsorbed light that are reflected back to us are what we see and what provide the color of the object.

When an object absorbs all of the wavelengths of light and none are reflected, it appears to be black. When all but a narrow range of light is absorbed by the chemicals or chromatophores of an animal, and only a few wavelengths are reflected back, that animal takes the color of the reflected light. Shells are made up of calcium carbonate and proteins. Pure calcium carbonate crystals reflect all wavelengths of white light, so a mollusc shell that has no pigments or structures to refract light appears white. The colors observed in a mollusc shell or animal can be due to one of two things: true pigments or structural colors.

True pigments, called biochromes, occur in both mollusc shells and bodies. They can give a mollusc red, orange, yellow, green, blue indigo, violet, brown, and black coloration. Some body pigments are present because they have definite functions of their own, and not because of the color they impart. An example of this kind of pigmentation is oxyhemocyanin. This compound transports oxygen in the same way as the hemoglobin which is found in our own blood. There are, however, a number of reasons why molluscs might add pigment to their body or shells: to provide camouflage, to decrease the amount of harmful light that reaches their tissues, to harden the shell's structure, and to eliminate harmful chemicals from their bodies.

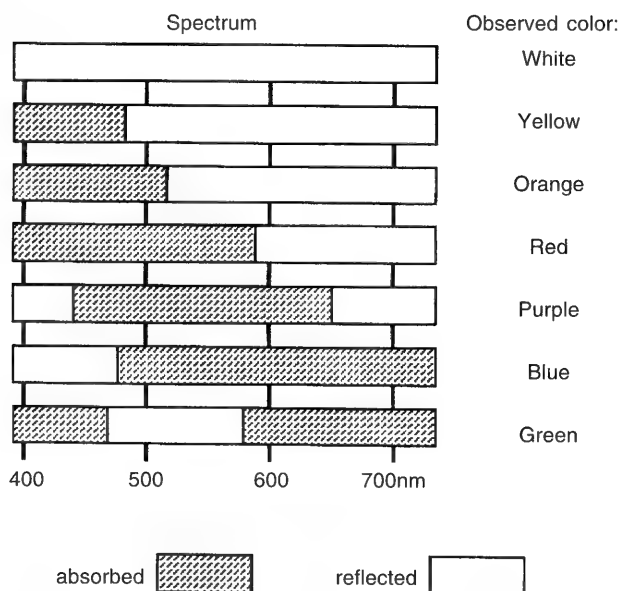
The green seen in many limpet shells and the blue-purple of oyster shells are caused by pigmented compounds that are the by-products of chemical breakdown. By depositing these compounds in their shells, the animals are eliminating them from their systems. One might wonder why these animals don't simply excrete toxic pigmented compounds instead of incorporating them in their shells. Most of these compounds are not very water soluble, and are therefore not easily excreted. Land molluscs have an even harder time since they need to conserve water; even highly soluble substances would be costly to excrete.

Other pigments, like β -carotene and components of chlorophyll, are not produced by molluscs but ingested as part of their normal diet. Ingested plant pigments can be seen in the skins and shells of several species of tropical land snails and nudibranchs. The colors seen in other nudibranchs can be attributed to their diets of sponges, soft corals, jellyfish and tunicates. The color of the shell and body of a Mermaid's Tear (*Simnia* spp.) is due to the color of seawhip (a colorful species of gorgonian or soft coral) it is feeding on, and the color of the animal and shell will eventually change if it moves to a different colored sea whip. (I have color photographs of the colored calcium carbonate spicules found in the sea whip tissues. I think the snails get their color from ingesting these spicules.)

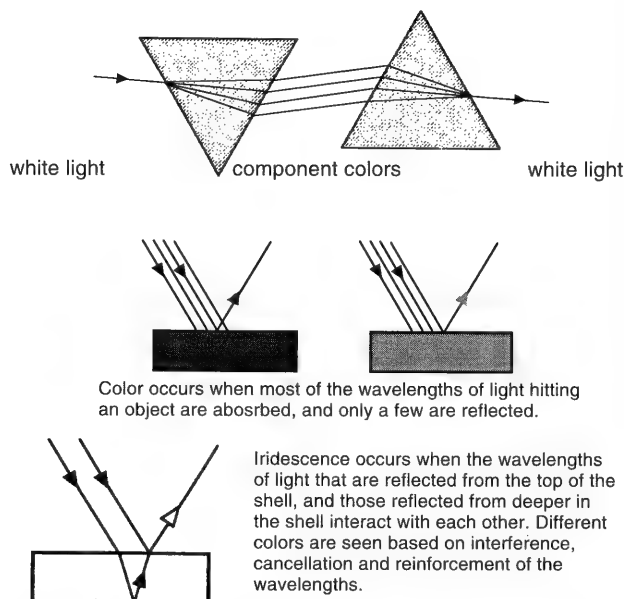
Certain species of nudibranchs take it even a step farther. They have developed the ability to raise zooxanthellae, a single-celled algae, within their bodies. The green-brown color of the living algae cells, which comes from the chlorophyll they contain, can easily be seen through the nudibranch's translucent skin. There are shelled molluscs that also have symbiotic zooxanthellae in their tissues. Zooxanthellae are found in the expanded siphonal tissues of clams in the family Tridacnidae [the most familiar species being the Giant Clam, *Tridacna gigas* (Linné, 1758)] and in gill and mantle tissue of the Heart Cackle, *Corculum cardissa* Kawaguti, 1950. *Tridacna* gape to let light reach their symbionts, while the shells of Heart Cackles are translucent, allowing light to pass through to the symbionts within.

Some of the most brilliantly colored marine animals are the opisthobranchs. These shell-less gastropods rely on their foul or toxic flavor to deter potential predators. Most of them do not manufacture the toxins, but get them from their own food sources (algae, sponges, cnidarians, and tunicates). Unlike the cryptic

ABSORPTION & REFLECTION OF LIGHT



REFRACTION OF LIGHT



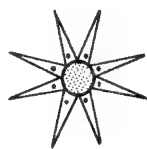
coloration that helps many nudibranchs escape detection, the bright and distinctive patterns opisthobranchs produce are warning signals. They warn potential predators with acute color vision (fish and decapod crustaceans) that this mollusc is no tasty treat! These warning colors have been effective enough for elaborate mimicry of them to have evolved, the same type of mimicry that is seen in butterflies. There are nontoxic amphipods, nudibranchs, flat worms, and even sea cucumbers that closely resemble different species of toxic opisthobranchs (Batesian mimicry). There are also several toxic opisthobranchs that resemble each other (Mullerian mimicry).

Structural colors, called schemochromes, are not produced by a pigment, but by the interference between refracted light waves. What exactly is refraction? Refraction is the deflection of a ray of light as it passes obliquely from one medium into another of a different density. Interference occurs when light hits a thin layer of translucent material and the rest is reflected from the top layer of the material and part of it passes through the top layer, travels through the substance, is reflected by the bottom surface of the material, and returns back through the substance. This means that some of the wavelengths of the light traveled farther than others. The result is that some of the wavelengths of light that are reflected back to us are not in phase with the rest of the reflected light. Light waves that are exactly out of phase cancel each other. We see only the color of the wavelengths that do not interfere with each other. The color we see depends on the angle at which the light hits the object and how far we are from the object. The color changes as we move in relation to the object. That is why the object appears to have different colors, because we are seeing the colors of different wavelengths of light. This is what we see on the surface of a soap bubble or the nacreous layer of a shell. The interior (nacreous layer) of abalone and pen shells displays structural colors. This well-known iridescent shine is commonly called "mother of pearl." The color you see when you look at this layer is from the interference of the light waves that are reflected by the extremely thin layers of shell (450 to 5000 layers per 1/25 inch in thickness). The most commonly seen colors are green, blue and purple, although iridescent shades of pink, red and yellow can be found.

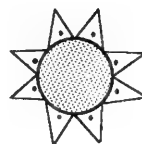
The true masters of the use of color are the members of the class Cephalopoda (Octopus and Squid). These animals display both iridescent structural colors and true pigments which they are able to change almost instantaneously. The pigments are kept in small cells called chromatophores. They look like small round bags with muscle fibers that radiate from them. When the muscle fibers contract the chromatophore's shape is changed into a flat plate, which exposes the pigment's color. There are three layers of chromatophore cells. The top layer contains bright yellow pigments, the next layer has orange-red pigments and the deepest layer has brown-red or black pigments. By expanding different

chromatophores the animals can change from red to black to yellow to white (white is the absence of any pigments). In addition to the chromatophores, the cephalopods have an additional layer of cells called iridophores which can reflect light, producing a greenish-tinged iridescence. This is caused by crystals of guanine (commonly found in DNA) that form tiny flat mirrors which reflect most light.

A mollusc **grows** its shell. Cells in the epithelial layer of the mantle secrete the proteins, pigments and calcium that form the shell. The periostracum is secreted at the growing edge of the shell and serves as the base for deposition of additional shell layers. Just behind these cells are the cells that secrete the matrix, pigment and calcium for the outer, or first, layer of the shell. Biochrome coloration in shells comes from pigments produced by special glands embedded in these cells. The pigments are closely bound to the organic matrix, or conchiolin, of the outer shell layer. Conchiolin is an important component of the shell; it fits between the calcium carbonate crystals like mortar in a brick wall. The calcium crystals grow on the organic matrix much the same way rock candy grows on a piece of string placed in sugar syrup. The type of crystal that forms depends on the concentration of ions and the pH of the extrapallial fluid (fluid between the mantle cells and shell). These



The shape of the cephalopod's chromatophores is changed by the attached muscle fibers.



1-4: Formation of a pigmented stripe and chevron at the edge of the shell.

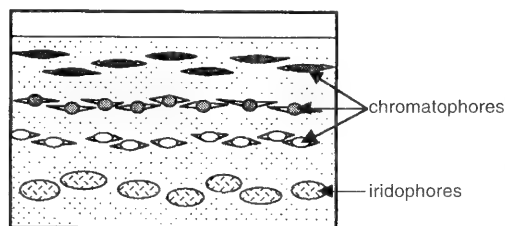
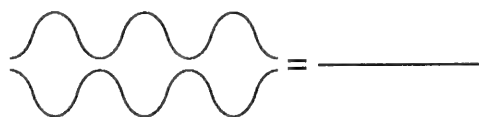


Diagram of a cephalopod's skin, showing the upper three layers which contain chromatophores, and the bottom layer which has iridophores.



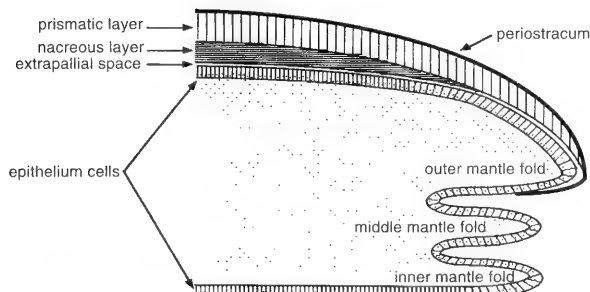
When wavelengths cancel each other, no color is seen.



When wavelengths reinforce each other, a strong color is seen.



When wavelengths interfere with each other, a weak color is seen.



THE COLOR OF SHELLS, CONT'D.

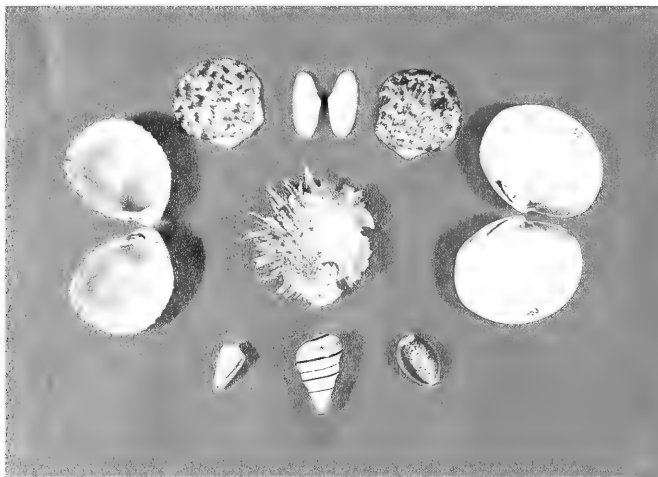
by Amy Lyn Edwards

crystals can be **prismatic** polygonal columns, **foliated** sheets, **crossed laminar** sheets or rounded **nacreous** plates. Depending on the species the shell may be composed of up to four different layers of crystals. All but the innermost layer, the nacreous layer, are secreted by cells along the edge of the mantle. The nacreous layer is constantly secreted by the whole mantle.

Molluscs are truly colorful animals. Some have brightly colored shells and drab bodies, while others have just the opposite. Often when you turn a white or brown colored shell over it will be brilliantly colored on the inside, as is the case with the familiar Purple Pacific Drupe, *Drupa morum* Röding, 1798. On some shells the colors are restricted to specific areas: the aperture on the Golden Mouthed Papuina, *Papuina xanthochila* (Pfeiffer, 1861); the spire on the Umbilical Ovula, *Calpurnus verrucosus* Linné, 1758; or the muscle scar on the American Oyster, *Crassostrea virginica* (Gmelin, 1791). Many species of molluscs have shells with a single color, and all individuals have approximately the same color. In other molluscs, different individuals of the same species will display

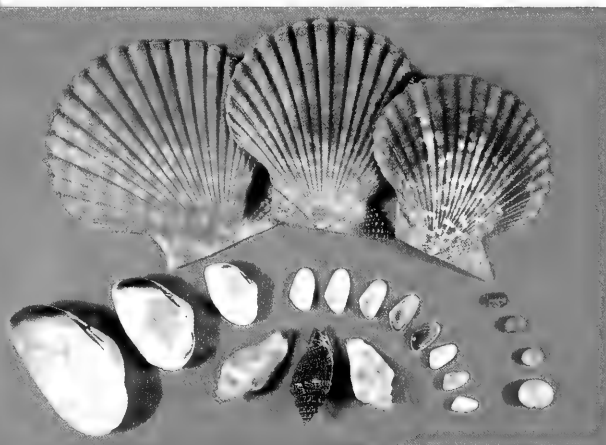
different colors. Examples of this include: the Noble Scallop, *Chlamys senatoria nobilis* Reeve, 1852; the Northern Yellow Periwinkle, *Littorina obtusata* (Linné, 1758); the Gaudy Asaphis, *Asaphis deflorata* (Linné, 1758); the Coquina, *Donax variabilis* Say, 1822; and the Little Bear Conch, *Strombus urceus* Linné, 1758.

In some shells the colored pigments create a pattern that covers the animal's entire shell. Common patterns include the spots on a Junonia, *Scaphella junonia* (Lamarck, 1804); the blotches seen on a Common Nutmeg, *Cancellaria reticulata* (Linné, 1767) and the Calico Clam, *Macrocallista maculata* (Linné, 1758); the stripes of the Colorful Queen Miter, *Vexillum regina* Cate, 1961; the chevrons on a Bat Volute, *Cymbiola vespertilio* (Linné, 1758) and the Hieroglyphic Venus, *Lioconcha hieroglyphica* (Conrad, 1837); and the zig-zags on Sowerby's Volute, *Ericusa sowerbyi* (Kiener, 1839) and the Zebra Ark, *Arca zebra* (Swainson, 1833). Using computer programs to mimic these patterns, scientists postulate that the same mechanism for pattern creation is used by a wide variety of shelled molluscs. A very similar chevron pattern is seen on shells such as: the Bat Volute, *Cymbiola vespertilio* Linné, 1758; the Feathered Cone, *Conus pennaceus omaria* Hwass, 1792; the Reticulated Miter, *Scabricola (Mitra) fissurata* (Lamarck, 1811); the Lettered Olive, *Oliva sayana* Ravenel, 1834; the Reticulated Cowrie-helmet, *Cypraea testiculus* (Linné, 1758); and the Venus Clam, *Protothaca grata* (Say, 1831). The epithelial cells in the mantle lay down the colored pattern based on the

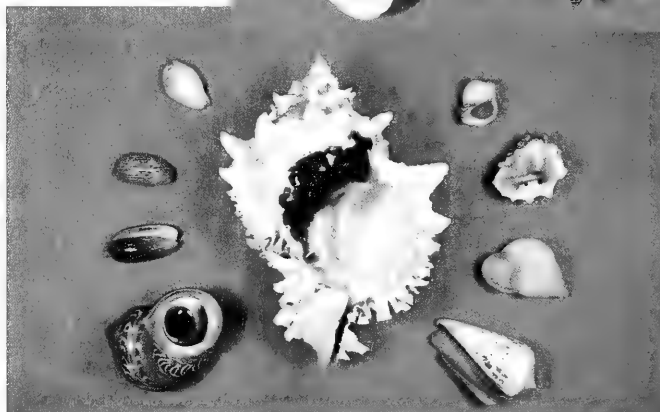


MULTI-COLORED SHELLS

(L to R clockwise; middle) American Prickly Cockle, *Trachycardium egmontianum* (Shuttleworth, 1856); Calico Scallop, *Argopecten gibbus* (Linné, 1758); Sunrise Tellin, *Tellina radiata* Linné, 1758; American Tiger Lucina, *Codakia orbicularis* (Linné, 1758); Honey Cowrie, *Cypraea helvola* Linné, 1758; Virgin Liguus, *Liguus virgineus* (Linné, 1767); Tesselate Cone, *Conus tessulatus* Börn, 1778; Golden Thorny Oyster, *Spondylus versicolor*

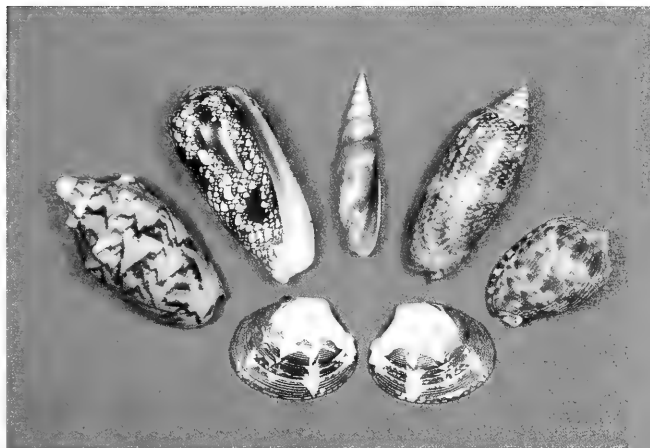


SPECIES WHERE INDIVIDUALS DISPLAY DIFFERENT COLORS (top): Noble Scallop, *Chlamys senatoria nobilis* Reeve, 1852; (middle, L to R) Northern Yellow Periwinkle, *Littorina obtusata* (Linné, 1758); Gaudy Asaphis, *Asaphis deflorata* (Linné, 1758); Coquina, *Donax variabilis* Say, 1822; (bottom) Little Bear Conch, *Strombus urceus* Linné, 1758.



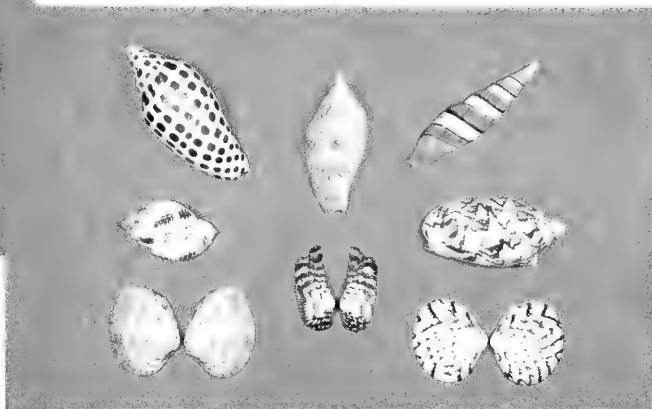
GASTROPODS WHERE THE COLOR IS RESTRICTED TO ONE AREA (from lower left, clockwise to middle): Operculum: Tapestry Turban, *Turbo petholatus* Linné, 1758. Siphonal canal: Blood Olive, *Oliva reticulata* (Röding, 1798). Siphon & apex: Isabella Cowrie, *Cypraea isabella* Linné, 1758; Umbilical Ovula, *Calpurnus verrucosus* Linné, 1758. Aperture: Violet Coral Shell, *Coralliophila neritoides* (Lamarck, 1816); Purple Pacific Drupe, *Drupa morum* Röding, 1798; Golden Mouthed Papuina, *Papuina xanthochila* (Pfeiffer, 1861); Strawberry Conch, *Strombus luhuanus* Linné, 1758; Regal Murex, *Phyllonotus regius* (Swainson, 1821).

All photos are by the author, using T160 film, tungsten lights and a copy stand. The shells pictured are from the collections of the author and that of the University of Georgia Museum of Natural History.



RIGHT: DIFFERENT COLOR PATTERNS ON SHELLS: blotches (lower left corner) — Common Nutmeg, *Cancellaria reticulata* (Linné, 1767) & Calico Clam, *Macrocallista maculata* (Linné, 1758); spots (upper left) — Junonia, *Scaphella junonia* (Lamarck, 1804); stripes (upper right) — *Vexillum regina* Cate, 1961; zig-zags (center column) — Sowerby's Volute, *Ericusa sowerbyi* (Kiener, 1839) & Zebra Ark, *Arca zebra* (Swainson, 1833); chevrons (lower right corner) — Bat Volute, *Cymbiola vespertilio* (Linné, 1758) & Hieroglyphic Venus, *Lioconcha hieroglyphica* (Conrad, 1837).

LEFT: CHEVRON PATTERNS: (top L to R; bottom L to R): *Cymbiola vespertilio*, Linné, 1758; Feathered Cone, *Conus pennaceus omaria* Hwass, 1792; Reticulated Miter, *Scabricola (Mitra) fissurata* (Lamarck, 1811); Lettered Olive, *Oliva sayana* Ravenel, 1834; Reticulated Cowrie-helmet, *Cypraeassis testiculus* (Linné, 1758); Venus Clam, *Protothaca grata* (Say, 1831).



ALBINISM IN THE LAND SNAIL *ACHATINA ZEBRA* (BRUGUIERE, 1792) FROM SOUTH AFRICA

by Brian Hayes

animal's genetic code. In the simplest pattern certain cells continuously produce pigments, so creating stripes. This pattern is seen on the colorful shells of the Painted Polymita [*Polymita picta* (Börn, 1778)] and the Florida Tree Snail [*Liguus fasciatus* Müller, 1774]. Blotches and streaks are formed when pigments are randomly produced. In more complex patterns, pigments are produced by different cells at specific intervals. The color produced may vary due to environmental conditions, in relation to availability of food or to differences in their genetic code. The intensity of the color will vary with the growth rate of the animal. When the animal is rapidly growing, color is reduced, while during non-growing phases it is darker. Thus the color and pattern of a shell represent a permanent record of the animal's life, a record that begins when the animal is a larva and follows it throughout its life.

Museum of Natural History, The University of Georgia, Athens, Georgia 30602-1882

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While albinism in the shells of molluscs is heard of from time to time, especially in marine molluscs, albinism in the animals of molluscs is (as far as I know) a rarity. Such a case was brought to my attention recently when a colleague of mine, Mr. Trevor Dalton, brought two specimens of *Achatina zebra* to me. I noticed that one had a creamy-white animal instead of the usual greyish-black animal (see photo). I found this amazing because all the animals I have ever seen over the last 20 years have been normal: greyish-black!

Achatina zebra is endemic to South Africa and is restricted to the eastern Cape Province. It is not uncommon in certain bushy areas, but only appears after rains when the ground is wet. It burrows into the sand during dry periods and keeps moisture in by forming a mucous layer across the aperture of the shell. The mucous layer dries into a crust-like protective "operculum." Typical coloration of the shell is yellowish, densely-covered with brown axial stripes. There are variants with broad zig-zag brown flames.

The author would be interested to know if anyone else has observed the occurrence of albinism in molluscan animals.

(Especially those with a normal-colored shell! — Ed.)

Algoa Bay Specimen Shells, P.O. Box 804, Port Elizabeth, 6000, South Africa



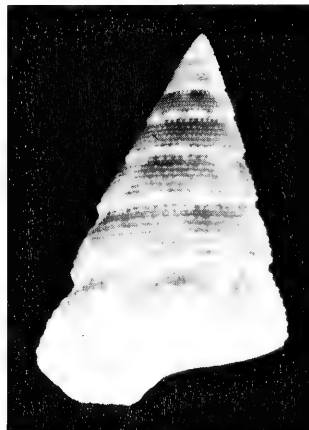
SELECTED FLORIDA AND CARIBBEAN SHELLS IN THE FLORIDA MUSEUM OF NATURAL HISTORY, GAINSVILLE *by Kevan and Linda Sunderland*



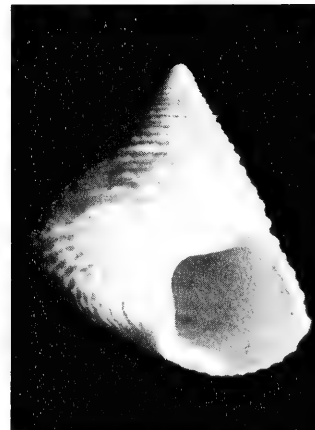
Calliostoma barbouri Clench & Aguayo, 1938. H: 14.8 x 18.8mm. 15 fms. off Havana, Cuba. #149982. PARATYPE. McGinty Coll'n.



Calliostoma blakei Clench & Aguayo, 1938. H: 5.1 x 6.3mm. 17 fms. off Cape Bermejo, Argentina. #153567.



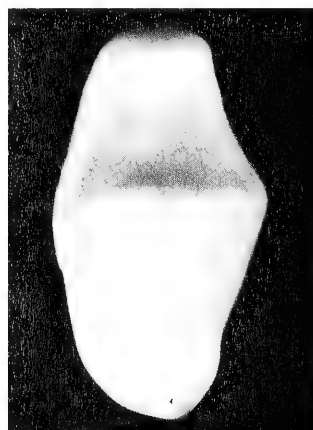
Calliostoma moscatelli Quinn, 1992. H: 24 x 15.5mm. 50-80 m., off Ilha de Santana, Rio de Janeiro, Brazil. #189458. PARATYPE.



Calliostoma scurra Quinn, 1992. H: 12.7 x 10.3mm. 30-35 M. Pilsbry Station P-834, (9.04.01N, 60.10.7W). #189457. PARATYPE.



Gaza cubana Clench & Aguayo, 1940. H: 18mm x W: 28.4mm. Straits of Florida. #153276. PARATYPE. Taken by M/V Blake 1877-1878.



Cyphoma mcgintyi robustior Bayer, 1941. 15 fms. off Deadman's Bay, Dixie Co., FL. #11166. Col. by Sozon Vatikiotis.



Primovula vanhyningi M. Smith, 1940. 11.1mm. 50 fms., Boynton Beach, FL. #11079. HOLOTYPE.



Haustellum rubidus citrinus (M. Smith, 1940). 28.4mm. Off Key Largo, FL. #174277. HOLOTYPE. = *Haustellum rubidus*



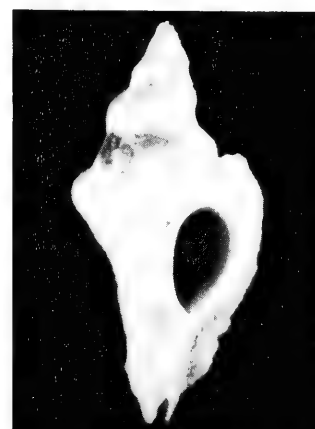
Pteropurpura bequaerti (Clench & Farfante, 1945). 25mm. 80 fms. off Delray Beach, FL. #11986.



Pteropurpura bequaerti, ventral view. Taken by Frank Lyman, July 1, 1940.



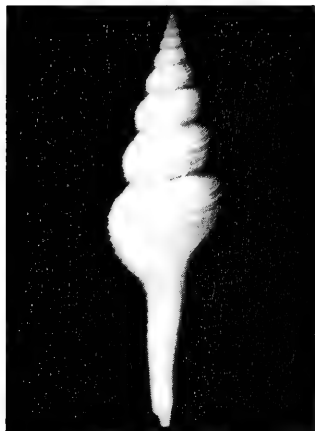
Pteropurpura gaze (M. Smith, 1940). 20mm. 40 fms. off Key West, FL. Station 1335. #174297. HOLOTYPE.



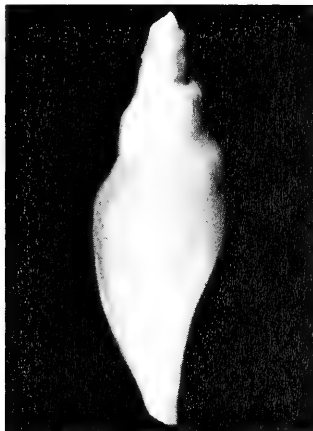
Pteropurpura gaze, ventral view. Taken by Ms. L. A. Burry. Syn. with *P. festiva* Hinds, 1844 from California.

9370 N.W. 39th Street, Sunrise, FL 33351

A special thanks to Dr. Fred Thompson and Kurt Auffenberg at the Florida Museum of Natural History in Gainesville, for allowing us to photograph some of the "special" shells in the museum collection.



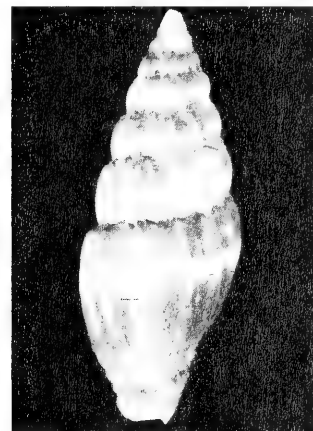
Fusinus helenae Bartsch, 1939. 59.5mm. 20 fms. off St. Marks, Wakulla Co., FL. #59156. PARATYPE.



Volutifusus torrei (Pilsbry, 1937). 61.4mm. 1500 m., s. of Grand Bahama Island. #11185.



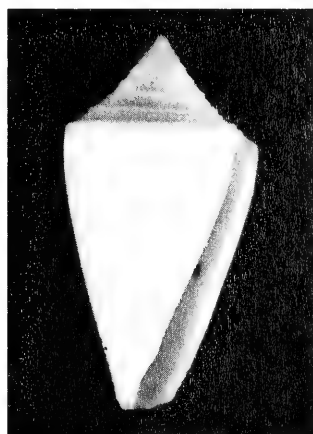
Volutifusus torrei, ventral view. Taken by an otter trawl in Providence Channel.



Vexillum epiphanea (Rehder, 1943). 28.9mm. 30 fms. off SW FL. ex. McGinty Collection.



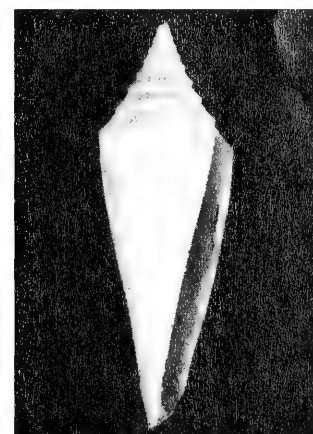
Conus bermudensis lymani Clench, 1942. 34.4mm. 150', south of Lake Worth, FL. #13362. HOLOTYPE. Syn: mindanus Hwass, 1792.



Conus caribbaeus Clench, 1942. 25.1mm. Off Hollywood, FL. #62941. PARATYPE. Collected by L.A. Burry.



Conus rainesae McGinty, 1953. 19.3mm. 33 fms. 150 miles NE of Yucatan. PARATYPE.



Conus rainesae, ventral view. Taken by M/V Premier I, May, 1953.



Conus juliae Clench, 1942. 53.7mm. Off Camp Walton, Okaloosa Co., FL. #13382. HOLOTYPE. Collected by F.B. Lyman.



Conus verrucosus piraticus Clench, 1942. 19.1mm. 33 fms. off West Palm Beach. #174328. HOLOTYPE.



Bullina exquisita McGinty, 1955. 7.5mm. 50 fms., off Singer's Hotel, Palm Beach. #174293. HOLOTYPE. Col. by T.L. McGinty.



Bullina torrei Aguayo & Rehder, 1936. 6mm. 15 fms. off Havana, Cuba. #155413. PARATYPE. Col. by C.G. Aguayo.

SHELLING IN SAMOA

by Emilio García

*This is the Verse you grave for me:
Here he lies where he longed to be;
Home is the sailor, home from the sea
and the hunter home from the hill.*

I cannot remember if I first wanted to go to Samoa because Robert Louis Stevenson, the famous author of **Treasure Island**, had spent his last years there, or if I found out that R.L.S. had spent his last years there while I was reading about Samoa. Or perhaps it was Margaret Mead's famous anthropological study on Samoan girls. In any case, it seems to me I always wanted to go to Samoa.

When I finally made my decision to go and asked some friends if they would join me, the standard reply was, "Oh, I always wanted to go there!" I knew that I wanted to go to both Western and American Samoa, and I also knew that Jo and Rusty Bennett, good friends of mine and incredible shell collectors, had been there. So, during a visit to Sanibel Island I went to visit them in Fort Myers to ask them for help. And help they did, not only with oral information but also with an envelope bursting with literature they had gathered while visiting the islands.

Two months later everything was ready to go, and a month after that the hurricane came. It was the month of December, and it was the strongest hurricane to hit Samoa in many years. I could not believe my bad luck! I had been in the same situation several years earlier when I had a trip to the Tuamotus all ready to go and a hurricane passed through the area, destroying the atolls. I had cancelled that trip, and friends who went there two years later found reefs almost devoid of live shells. Would this be the case in Samoa?

I figured it was too big a decision to make by myself so I called some of the friends who were going with me to find out what the consensus was. The word was "go." We figured that the Samoas were different from the Tuamotus in that the latter were small rings of land sticking a few feet out of the water, while the Samoas were mountainous islands of much larger size.

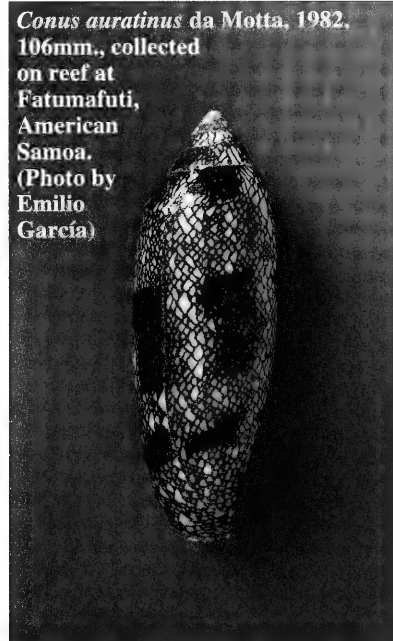
The trip was uneventful: a nice flight to Hawaii and then direct to American Samoa, where we would have a short wait for the plane to Western Samoa. Did I say a short wait? Let me just say that we were supposed to arrive in Apia, the capital of Western Samoa, at around 8:30 p.m. and we did not get to our hotel until 4:00 a.m., just in time for the low tide. I was ready to go to my room, change clothes, and go snorkeling, but I could not get anyone to go with me. Chickens!! I finally had to give up until the morning.

The Hotel Tusitala was exquisite, and as romantic as the



Samoan boys on the island of Manono, Western Samoa. (Photo by Emilio García)

Conus auratinus da Motta, 1982,
106mm., collected
on reef at
Fatumafuti,
American
Samoa.
(Photo by
Emilio
García)



person for whom it was named, Robert Louis Stevenson, the "Teller of Tales." The lobby was huge, totally open to the South Seas breezes and oblong in shape, like a classic "fale" or Samoan ceremonial building, with a beautifully woven, very high, thatched roof. Everything was natural wood: floors, furniture, the large tree trunks that served as columns. After admiring the surroundings I went to bed, but my excitement didn't allow me to sleep...until suddenly I was awakened by intense sunlight which the drapery at my window was trying futilely to keep out. I was late! I didn't know for what, but I knew I was late; after all, I didn't come all the way here to sleep!

By the time I got to breakfast several friends had already gone and come in with their finds, and the results were not promising. Of course, all they had done was walk the beach and, after all, it was high tide, but they were not able to find very much. This was disappointing because the area had been very highly recommended. Was it the hurricane, I worried? But then things began to happen. The tide began to recede and the latecomers showed up with beautiful *Cypraea mauritiana* Linné, 1758 and other species they'd collected under rocks being exposed by the tides or crawling in sand in very shallow water. Suddenly, there was a stampede, and



ABOVE: Hotel Tusitala in Upolu, Western Samoa (Photo courtesy of Dr. A.B. Osborn)



LEFT: Typical "fale" or Samoan community building. (Photo by Emilio García)

even those who had just come in disappeared as if by magic. And the fun began.

The east side of Mulinu'u Peninsula, at whose base the Tusitala is located, is very much like other great collecting places I have visited: an area with a variety of habitats, such as coral heads, rubble, sand, grass and silt, with a protective reef of tiny flat islands, not too close to shore. Although the area was relatively shallow, averaging only about three feet at low tide, there were strong currents when the tide came in, and one had to be careful.

The main species most of us were looking for was a form of *Conus marmoreus* Linné, 1758 called "nigrescens" by Sowerby II in 1859. It is of small size, usually growing no larger than 50mm, and it varies in coloration from typical *marmoreus* to solid black. I had seen a magnificent collection at Jo and Rusty Bennett's, and the sight of those cones had given me the final impulse to get to Western Samoa. It seems this form has not managed to cross to American Samoa, so we knew that if we did not find it here, we would not find it anywhere. But we found it!

Actually, we started finding them immediately, although the specimens found in the first couple of days were of regular coloring. They did not have a specific habitat, and were found under rocks, in sand, and in rubble. When we did start finding the darker specimens, however, it seems that they were all under rock, or in rubble, never in sand. They were very uncommon, and I hypothesized that perhaps it was because through the years, collectors had been picking the dark form and leaving the regular, so the gene pool was being depleted of its dark component.

As we searched for the "nigrescens" we were finding many interesting species, from a huge *Eulima major* Sowerby, 1834, with its beautiful pale green animal, to interesting live *Liotina cidaris* Kiener, 1834 feeding on algae growing on dead stag-horn coral.

One day we decided to go to the tip of Mulinu'u Peninsula because we were told that they had been doing some dredging there. They indeed were but, although one could find quite a number of species about, the shells were a little too dead for me, and so I decided to snorkel back to the hotel. When you're searching under rocks, in crevices, amid rubble, the shell is either there or it isn't. It all happens at once. Following tracks and seeing the hump at the end gives one a much longer thrill! You know there is a shell there, but what is it? Well, I must sincerely tell you that this was the megalopolis of sand dwellers. There were not only zillions of tracks, but it seemed that if I turned my head for a second, a small area I had just inspected had many new tracks when I looked again. There were *Oliva miniacea* (Röding, 1798), *O. caerulea* (Röding, 1798), and *Terebra maculata* (Linné, 1758) and *T. affinis* Gray, 1834 everywhere. Then there were *Terebra areolata* Link, 1807, *T. subulata* (Linné, 1767), *T. dimidiata* (Linné, 1758), *T. babylonia* Lamarck, 1822 for the taking, but the species that had eluded me for years and that I was delighted to find was *T. chlorata* Lamarck, 1822. And there were many large and colorful specimens. A large track I followed, which I thought was going to yield yet another *T. maculata* had instead a huge *Oliva sericea* (Röding, 1798). What can I say?

One day we decided to take a trip to Manono Island, just off the island of Upolu, where Apia is located. It is an enchanting little place, with a Samoan village that time forgot. No cars, no noise, just the friendly Samoans doing their daily work. We decided not to collect there, since it all looked so private, so we went to a very tiny island called Nuulopa, just off Manono. The collecting around the rocky is-



Samoa lady weaving palm strands. (Photo by Emilio García)

land was very interesting, and we found beautiful live *Conus geographus* Linné, 1758, with their interesting periostracums intact, and many other species of smaller size. And here we were, where we thought was the edge of the world, when we suddenly heard the sound of an explosion and saw every native around getting on a boat, paddling like mad toward the distant reef. They were dynamiting the reef for fish! What an empty feeling. In an instant, that idyllic area had been brought into the midst of the "civilized" world we thought we had left way behind. In answer to our expressed concern, the answer of the Samoans was, "We have to eat." Our return trip to Apia was full of foreboding.

In our last day in Western Samoa four of us decided to take the hard climb up the slopes of Mount Vaea to visit the resting place of Robert Louis Stevenson. The Scottish author, ill with tuberculosis, had moved to Western Samoa to take advantage of the balmy climate of the islands, and, just as importantly, I presume, because of his romantic nature, which was drawn by these exotic South Seas islands. During his six years on the main island of Upolu, he took the side of the Samoan natives and used his influence against the foreigners who were dictating Samoan affairs, thus becoming a hero of the islanders. He died, suddenly, in 1894:

The sad news of Tusitala's death had spread with mysterious speed throughout the island. All through the night noiseless groups of dark-skinned men from neighboring villages, High Chiefs and common folk, kept coming. They brought heavily scented tropical flowers and finely woven mats, which are held almost sacred by the Samoans and which are heirlooms in the families of the princes. Their chieftains laid them respectfully on Tusitala's body until the flag of Britain was almost hidden....

It was a frightfully sultry day; and they had to carry a heavy coffin up a roughly built trail through the virgin forest to the top of the high mountain. Relays of young warriors took turns as pallbearers; and they deemed it shameful to carry the beloved burden other than shoulder high. —from Richard A. Bermann's *Robert Louis Stevenson in Samoa*, McMillan Publishing Co., 1967

Now the four of us were climbing the same path that almost a century before had seen the author to his resting place. It was early in the morning, and as we climbed, almost walled in by the lush tropical vegetation, we felt we were taking a trip to the past. By the time we got to the top the sun was



Conus marmoreus, Linné, 1758, showing pattern variation within a single population. (Photo by Emilio García)

fully out, and we could see from that nostalgic place where Stevenson never could go while he was alive, the full splendor of the island. He had chosen well his place to spend eternity.

The next day we flew to American Samoa. We had heard nothing but stories of pollution, drunkenness, and the state of decay of the Rainmaker Hotel, where we would be staying. But, even though some of the rooms of the hotel were not up to par, mainly because of damage caused by the hurricane, I found it to be charming, and its staff very accommodating. Tutuila, the main island in American Samoa, although very beautiful, topographically speaking, has lost most of the charm that one can find in Western Samoa. However, we did not experience any problems with drunkenness, and Pago Pago Bay was not at all as bad as we had imagined it. Perhaps the hurricane had cleaned it up. But my most pleasant surprise was the collecting. If anything, it was much better than Western Samoa!

I had been tipped by Jo and Rusty Bennett about several good collecting areas. One of them, Lepua, was a very unlikely place: the road was some eight feet above sea level, with a cement wall protecting it from the waves and, on the other side of the wall, huge boulders had been dumped for still more protection. It was a feat just getting down to the rough water. Blindly trusting our friends who had given us such great advice before, we climbed down and marched in.

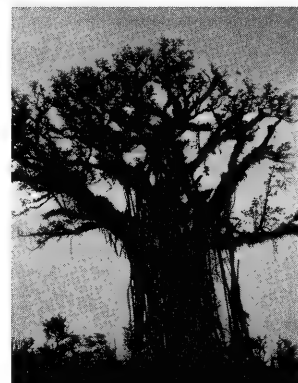
Shells were everywhere, and as the tide went down the water got calmer. None of us had ever seen so many *Cypraea arabica* Linné, 1758, *Cymatium aquatile* (Reeve, 1844), or *Cymatium mundum* (Gould, 1849), together with scattered *Cymatium rubeculum* (Linné, 1758), *Cymatium hepaticum* (Röding, 1798), and a couple of *Cymatium pyrum* (Linné, 1758), all in two to four feet of water. We went to that locality three days in a row, and we were always successful. However, for those who may want to go there one day, a note of warning: the current can be very strong, and it is very deep on the other side of the reef!

On our way from the airport to the Rainmaker Hotel, on that first day in Tutuila, we had seen some nice rock formations sticking out of the water just a few meters from shore. One day, when many of us had gone one more time to Lepua, several of the not-so-enthusiastic snorkelers decided to explore on their own, so they rented a car and left. Our mutinous friends thought that the place we had sighted on our way from the airport was as good as any to check out. Some went snorkeling in very shallow water, while certain *others*, who are the type that like to take their time, inspect every grain of sand, and purposely be the last in, decided to check a barren-looking, bone-dry lump of rubbly reef sticking out of the water. Laurretta Marr was her name. She may miss *Strombus gigas* Linné, 1758 but will never, never miss *Cerithiopsis* or a *Rissoina*. I had seen her style in Takapoto Atoll in the Tuamotu Archipelago a couple of years earlier. It was she who first found all those little, rare species of cowries that inhabit French Polynesia.



Fatumafuti, a micromollusk paradise. (Photo by Emilio García)

6. One of hundreds of huge banyan trees damaged by the 1991 hurricane. (Photo by Emilio García)



Laurretta walks the area with the demeanor of someone who is bored to tears and has nothing better to do. When she sees a place which, for some strange but unfathomable reason, appeals to her, she just squats down and begins to examine every square centimeter.

Well, that one day, soon after my return from Lepua to my room at the Rainmaker, and I was excitedly examining the new, wonderful treasures I had collected there, when the phone rang. It was, of course, Laurretta, who has a way of saying "Emilio" (it takes her three times as long as it should when she says it that way) which immediately tells me that she has found some great stuff that she knows will make me utterly jealous. And then she says, "Come see what I got." Guess where I went collecting the next day!

The name on the map is Fatumafuti, although most people call it "The Flower Pot" because on the site is a barren rock with plants only on the top. The lump of reef, which is just north of the rock, gets exposed at every low tide and is mainly composed of rubble with very few larger rocks. Only the top portion of the reef is rich in live or newly-crabbed micromollusks — under almost every small rock. Once the reef begins to take on a grayish green color, there is nothing there. We found some 100 species there, which included such interesting genera as *Halistylus*, *Dentarene*, *Alaerato*, *Triphora*, *Lienardia*, *Mitra*, *Daphnella*, *Philbertia*, etc.

We had reliable information that collecting was very good just in front of the Rainmaker. We had gone collecting there during our first night in Tutuila and had very little luck, so we ignored the area for the rest of our stay, until the last day, that is. While some of us were having fun in Fatumafuti, Vern Stubblefield decided to check this area one last time and, sure enough, came back with many interesting species, including his first live-collected *Harpa amouretta* Röding, 1798. When we asked him where his wife Carol was, he said that she and Kathy Krattli had gone to Fatumafuti, from which we had just returned. Good luck," we thought, since we had covered the area with a fine tooth comb.

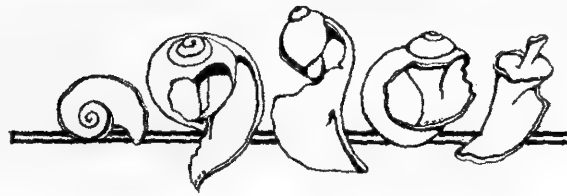
An hour later there came a knock at my door announcing Carol and Kathy. Carol was carrying such a large *Conus auratus* Da Motta, 1982 that at first I thought it was an unusually colored *C. aulicus* Linné, 1758. She had found it on top of the reef, probably thrown there by the recent hurricane. What a way to end a great vacation! And now, to pack all the shells, get ready for the Polynesian show tonight, and start psyching up for the very, very late flight back.



The Rainmaker Hotel in American Samoa, with Rainmaker Mountain in background. (Photo by Emilio García)

Editor's note: If Emilio García's article about the Samoas piques your curiosity, you might find COA member Bob Purtymun's Hawaiian Shell News series of occasional columns on American Samoa of interest. These were published between 1975 and 1983. Bob lived in Samoa in 1975 and 1976 and was an avid snorkeler and diver during those years.

Flotsam and Jetsam



Good news for cowry collectors, Jiri Zidek has sent out notice that he is now taking subscriptions to his new periodical, *The Cowry n.s.* This magazine is to be a revival of Lt. Col. R.J. Griffiths' 1960-1965 magazine, *The Cowry*, thus the "n.s." in the title, for "new series." It's to be a "refereed international journal devoted to all aspects of the taxonomy, biology and philogeny of the Cypraeaacea and related groups" and will deal with both fossil and recent cowries. This should be good news for cowry collectors. We're glad to see that initial plans are for only two issues a year and a subscription rate of just \$20 — a modest undertaking which ought to be manageable enough to succeed. We hope so.

The **CAIRNS SHELL NEWS**, an Australian shell club club newsletter, is beginning a series on Australian volutes. They begin the series with the following introduction:

"*Multiform Australian Volute* was published some years ago by the late Frank Abbottsmith. Its prime function was to nominate distinct forms of each Australian volute species within Australia. Now a number of collectors have established wonderful scientific collections, showing the huge diversity of colour, pattern and form within individual Australian volute species. With their help over the coming issues, we will be passing on information not readily available."

Part 1, in the January 1994 issue, discusses the decidedly multiform *Ericusa fulgetrum* (Sowerby, 1825) which does rather a quick change act all across the southern coast of Australia. If volutes are your passion, you really ought to look into this publication. The newsletter editor is Nicholas Trabant, 232 Mulgrave Rd., Cairns, Queensland, Australia.

BETTY LAWSON, COA member from Naples, Florida, has written a shell book, **An Illustrated Guide to Common Shells of San Salvador Island**, published by the Bahama Field Station, San Salvador, Bahamas. Betty has been teaching at Elderhostels there (and shelling too) and when she noticed that the field station publications included many books on the flora and fauna of the island, but none on seashells, she set out to remedy that situation. The book is a 71-page plastic-covered soft-back book covering 215 of the more common species, and sells for \$12. However, it will be sold only at the field station, so if you want a copy, you may have to get in touch with Betty. Meanwhile, congratulations on your new "baby," Betty!

ANOTHER BOOK ON MOLLUSKS appeared in our midst last summer, probably unnoticed by most of us. That's because it was written for children. Mary McHarg of Sanibel wrote **SANIBEL SEA LIFE; A Course of Study for the Fifth Grade**, with the assistance of Alice Anders of Sanibel who amended it, and Dorothy Vaughn who compiled and produced it. The intent of this intensely environmental publication is to foster children's understanding of Sanibel (and by extension, all wild places) as a unique set of interdependent habitats supporting a diversity of wildlife, to make them aware of the factors that can cause its breakdown and eventual destruction, and to teach them to value and protect this place because of its gifts to the earth. Reviewer Margaret Thorsen in Sanibel Shell Club's *The Junonia*, says she found herself wishing that it was required reading for developers and real estate brokers.

FOSSIL BILL UPDATE — Behind on our reading, as usual, we learned just after the December issue went to press that Senate Bill #3107, the one aimed at closing all public lands to fossil collecting, failed to make it to the floor of Congress, and so has fallen by the wayside. Yes!!

However, it is now illegal to collect fossils on all state-owned land in Florida unless you have a state-issued permit. The up side of this, though, is the fact that the State of Florida is interested only in vertebrate fossils. Fossil sharks teeth, fossil plants and, especially, fossil shells are specifically excluded from this law.

WORD HAS IT that Dr. Eugene Coan and Dr. James H. McLean of the Los Angeles County Museum of Natural History are working on a revision of the shells of the eastern Pacific. Won't that be splendid for collectors!

TEXAS TEE SHIRTS - We hear that our great COA 1994 Convention hosts, The Gulf Coast Shell Club, have the design finished for the 1994 COA Tee Shirts, and that they are absolutely gorgeous! But we'll have to wait til mid July to see them. Wonder if they have bluebonnets on them?

PRAISES FOR GLEN - COA Past President Glen Deuel was recently honored by his home club, the North Alabama Shell Club, for all his efforts as editor of the Nautiloid, the North Alabama Shell Club newsletter. Glen is also a past president of that club, as well as past editor and was instrumental in the founding of the North Alabama Shell Club. We're proud of you too, Glen.



COA CONVENTION DISCOUNT AIRFARE:

For COA Convention attendees, Barbara Rembisz, COA member from Dallas, has arranged an additional 5% discount from American Airlines on both regular and special fares from July 15-24, 1994.

Attendees should be on the lookout for "fare wars" offering special rates. Read all restrictions carefully to see if the applicable travel dates coincide with the convention dates. **THESE FARES ARE NON-REFUNDABLE AND CHANGES ARE SUBJECT TO A FEE PLUS FARE DIFFERENTIAL**

To receive the additional 5% discount, call Barbara at 1-800-308-1983 between the hours of 4:30 p.m. and 6:30 p.m. Central Time, Monday through Friday. In addition, she will be in the Advanced Travel Network Office the first Saturday of the month, April-July from 10:30 a.m. -12:30 p.m.

If a "fare war" does occur, she will also be in her office on the Saturday immediately following the announcement.

PUBLICATIONS ON FOSSIL MOLLUSKS

As those of us who are building a reference library on fossils quickly discover, there are not many popular guides on the subject of fossil mollusks, and the few that are available seem rather incomplete to us shell collectors, who have such a rich popular literature at hand to satisfy our informational quests. Most fossil publications are rather more scientific than we'd like and deal with a particular area and a particular geological time period, so building our library becomes quite a complicated pursuit. But, after all, we are collectors. That passion we have to find and acquire the objects of our interest will serve us well in this quest. And so will word of

For southwest Florida collectors, Axel Olsson and Anne Harbison's 1953 **Pliocene Mollusca of Southern Florida with Special Reference to Those From North St. Petersburg** is standard and invaluable. Long out of print, it was reprinted in 1990 by the Shell Museum and Educational Foundation, Inc., Sanibel Island, Florida, and made possible by the gift of Al and Mary Bridell, COA members from Sanibel.

The latest popular piece of fossil literature on the state of Florida is Dr. Ed. Petuch's (Florida Atlantic University) little book, **The Edge of the Fossil Sea**, published by the Bailey Matthews Shell Museum on Sanibel, a must-have if you are interested in the Florida That Was. In it, Dr. Petuch brings the middle Pleistocene of Florida back to life, introducing us to some strange yet oddly familiar geographical features that once were south Florida, and to the mollusks that inhabited them.

Dr. Petuch has a number of other works of interest to fossil collectors, especially on the fossils of Florida. Among these are his 1988 **Neogene History of Tropical American Mollusks**, published by Coastal Education and Research Foundation. In 1991 came his **New Gastropods From The Plio-Pliocene Of Southwestern Florida And The Everglades Basin**, available for \$12.00 from the W.H. Dall Paleontological Research Center, Department of Geology, Florida Atlantic University, Boca Raton, FL 33431

Many publications are produced by state agencies, especially the state geologic surveys, and by museums. According to **The Capsule** of the Astronaut Trail Shell Club, the following free publications are available from the state of Florida for a postage and handling fee of \$1.00 each:

- Bulletin 35, Eocene Mollusks from Citrus and Levy Counties, Florida

- Bulletin 36, The Plio-Pleistocene Stratigraphy and Paleontology of Southern Florida

- Map 125, A Guide to Geologic and Paleontologic Sites in Florida

Order from Florida Geological Survey, Attention: Publications, 903 W. Tennessee St., Tallahassee, FL 32304-7700.

Another area rich in fossils, but fossils from a far earlier period is the Ohio River drainage. The rocks in many parts of the state are far older than Florida, and are dominated by corals, brachiopods and trilobites, but these fossil beds produce some fine and unusual mollusks as well, especially the cephalopod forms. Other regions of the state, notably the coal producing areas, boast Mississippian, Pennsylvanian and Permian rocks, and the fossils from these regions are fascinating. A good and inexpensive guide to this area is **Ohio Fossils** by Aurele La Rocque and Mildred Fisher Marple. It is Bulletin 54 of the State of Ohio Department of Natural Resources, Division of Geological Survey, Columbus, OH. Also, the Cincinnati Museum of Natural History (1720 Gilbert Avenue, Cincinnati, OH 45202) has produced **Cincinnati Fossils**, an introductory guide to the Ordovician fossils of the formation known as the Cincinnati Arch.

The Carolinas offer some excellent fossiling, all along the Coastal Plain, from the Triassic to the late Pleistocene, and in the

Piedmont some rare Cambrian and even Eocambrian outcrops occur. Three publications on the area that this writer is aware of are the excellent **Fossil Collecting in North Carolina**, Bulletin 89 of the Department of Natural Resources and Community Development, Division of Land Resources, Geological Survey Section, P.O. Box 27687, Raleigh, NC 27611; **Geology and Paleontology of the Lee Creek Mine, North Carolina**, Clayton E. Ray, Ed., Smithsonian Contributions to Paleobiology Number 61, Smithsonian Institution Press, Washington, D.C.; and the Paleontological Research Institution's reprint of M. Tuomey and F.S. Holmes' 1857 **Pliocene Fossils of South Carolina**.

Paleontological Research Institution, 1259 Trumansburg Rd., Ithaca, NY 14850, has produced a number of other useful works in their **Bulletins of American Paleontology** series. Axel Olsson and Richard Petit's **Some Neogene Mollusca from Florida and the Carolinas** is very useful. Write for a list of their titles.

This discussion barely scratches the surface of the many publications available. In June, we'll have a look at some of the material available in **Tulane Studies in Geology and Paleontology**. All of you readers who have some favorite titles for your region, or other titles in the areas we've already covered, please share information about them with our other fossil hounds by writing to your Editor, 1222 Holsworth Lane, Louisville, KY 40222.

AN AMERICAN CONCHOLOGIST INDEX!

You say you've been working up those new shells you acquired from a trader in Aruba and have a packet of mystery Calliostoma. You would like to enclose one or two in a package going to your trader in South Africa, but you feel like you ought to put SOME I.D. on the things? You know Kevan and Linda Sunderland did an **American Conchologist** centerfold article on the Calliostoma. But when? Those things have been running for years! Or you're working on a program (scheduled for tonight, of course!) for your club on shell shows and you need some more information. FAST! You remember reading a proposed set of uniform guidelines for shell shows in an article in **American Conchologist**. But which one? You leaf through a year or so of your back issues, but can't find word about your topic. You wish for a genie to materialize and do the search for you, because you simply haven't the time. Too bad...or is it?

COA found such a genie, in the person of Texan sheller and computer teacher Winston Barney, a few years ago. Winston prepared a complete Index to the **American Conchologist/COA Bulletin**, Volume 1-19. And the good news is, it's still available! For just \$4.00 postage paid, you can order your own **COA Index** from COA Property Manager Hank Foglino, 4 Trent Court, Smithtown, NY 11787-1266. Checks payable to COA And if you then find you've misplaced the issue in which your topic was discussed, help is at hand! Back issues are available from the same guy. (But some are in very limited supply.)

And there's more good news. Winston the Genie is hard at work keeping the **Index** up to date in preparation for a supplement in the future. We'll keep you posted.

COA GRANTS ENCOURAGE MOLLUSCAN RESEARCH

The COA Grant Program is one of three main focusses for COA's efforts, along with the annual conventions and publication of the **American Conchologist**. Dedicated since our founding to the cause of education about mollusks, we are very proud of our past record in funding the research of dedicated students and workers in the field. Since COA began the program in 1985, we have channelled over \$30,000 into research and study through these grants, to projects as diverse as the taxonomy of Brazilian Volutes by Jose H. Leal and a study of the egg capsules of neogastropods (see article by 1992 Grant Recipient Dr. Charles D'Asaro, this issue).

We began small in 1985, with \$1,500 in grants to the Smithsonian Institution and to the Long Island Shell Club to assist with the publication of their club project, a guide to **Seashells of Long Island**. As we have grown, so has the sum we have allocated to grants. In 1993, the annual sum was increased to \$6,000. This money was allocated among eight recipients on the recommendation of our Grants Committee, Dr. Henry Chaney, Walter Sage, and Chairman Dr. R. Tucker Abbott. (See list of recipients, topics and grants in the September 1993 **American Conchologist**). Dr. Abbott has assured the Board of Directors that the Grants Committee found it necessary to turn down the requests of almost an equal number of grant applicants because that \$6,000 would stretch only so far. Obviously there is great need for such a program as ours, and plenty of room for it to expand.

Limitations, however, arise in the amount of funds COA can earmark for these grants. The entire program is funded from the receipts of our annual auction. And the auction is in turn fueled by the generous donations of shells, books and other shell-related items by COA members. Without these gifts (and, of course, the energetic and acquisitive participation of COA convention attendees at the auction), the Grants Program would fail. It is in this interest

that we ask all you members to give, and then give some more. Support the Grants Program, both by your generous donations and by your fevered bidding at the Annual Auction in Corpus Christi.

The following letter announcing the 1994 Grant Project has gone out to selected individuals, organizations and publications:

The COA is pleased to announce that it is continuing its support of molluscan research by extending its grant program into 1994. Grants of up to \$1,500 per application will be available to qualified persons undertaking recent or fossil, field or laboratory research work.

Applicants must outline the proposed project, the amounts and purposes for which the award will be used, included requested supplies, expendable equipment, living and/or travel expenses, or publication and illustration costs. The applicant should also submit a short biography that includes his or her educational status or pertinent job experience and a letter of recommendation from a scholastic or professional source.

The deadline for grant applications is May 15, 1994. They should be mailed, in duplicate, to

**Dr. R. Tucker Abbott, Chairman
P.O. Box 2255
Melbourne, Florida 32902-2255**

Applications are judged by the COA Grants Committee and awards will be made at COA's annual convention, July 17-23 at Corpus Christi, Texas. Please note that awards are made only to citizens or permanent residents of the Americas or to students attending graduate schools in the United States, and do not cover salaries, overhead, permanent equipment, conference or meeting costs....

Sincerely yours,

John J. Odenwald
for the Grants Committee

WAS TUCKER ABBOTT A COA PRESIDENT?

We bet you don't know the answer to that, but we know how you can find out. Write to COA Property Manager Hank Foglino at 4 Trent Court, Smithtown, NY 11787-1266, and enclose a mere \$2.00 (checks payable to COA). Hank will send you the **Twenty Year History of the Conchologists of America 1972-1991**, written by Lucy Clampitt. Your answer will be contained within, along with how COA got started, where the first COA convention was, and who was the first president? Who started the Bourse? How long has Walter Sage been Treasurer? Read it in the **COA History**. How did the Club Representatives Program come into being? Or maybe you'd like to know more about the year the COA Convention site blew up! Read the History.

All of you who have come to love COA and its conventions really need this book, illustrated with historic photos and designed and published for COA by Maryland shell dealer Rich Goldberg (Did you know Rich is a COA Past President? Yep! 1986-87.) The collector in you will enjoy the Convention booklet covers from 1978-1991, illustrated on the back cover; and the front cover has a real treat: another of those marvelous John Timmerman drawings, this one a playful look at COA logo shells (Yes, I said shells. There were two different ones, you know).

PIN MONEY

By the time you read this, the Cleveland Shell Club should have their club pins in hand and ready for sale. The pins are \$8.00 to non-members. We hope to see this new pin for sale in Corpus Christi in July.

HAVE YOU MADE YOUR DONATION TO COA?

The 22nd Annual Convention of the Conchologists of America (COA) will be held July 17-22 in beautiful Corpus Christi, Texas. Since this will be the first COA convention held in Texas, we Texans are preparing a special treat for those COA members in attendance.

The annual auction, held during the convention, is the major fund-raising event for COA. The proceeds go primarily to fund our very important educational grants program.

Donations are needed for the oral auction, silent auction, and raffle. As the 1994 Auction Chairmen, we are requesting your support. Donations of rare shells, specimen shells, fossil specimens, coral specimens, shell books, shell art, shell photography, and other shell-related items would be greatly appreciated.

If possible, we would like to receive all donations by June 1, 1994. This will allow time to prepare donations for the auction.

Please send your donations to:

**Dave and Lucille Green
12307 Laneview Drive
Houston, TX 77070**

We sincerely hope you will join us in making this year's auction a Texas-size success. See you in July in Corpus Christi.

1994 AMU IN HOUSTON

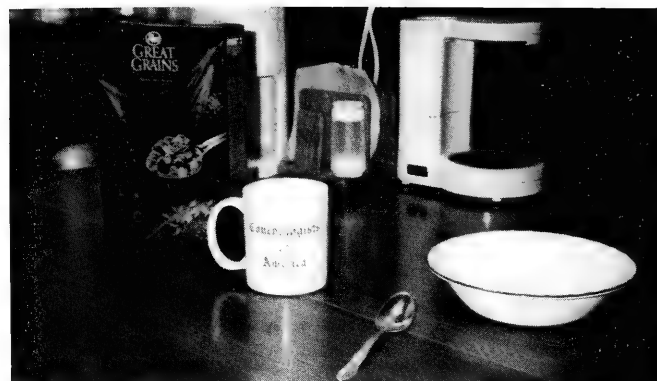
"Pack your poke, tighten your belt, mount your hoss and gallop on down to Houston in July for a grand ole Texas party." So reads the introduction to the special meeting package AMU has mailed out recently. "We look forward to seeing you. We promise you a real Texas celebration. Y'ALL COME," says Constance E. Boone, 1993-94 President of AMU and a Texan, herself.

Sure to please the freshwater enthusiast is a unionid workshop, handled by Robert G. Howells of the Texas Park and Wildlife Department, currently hard at work on a book about Texas mussels. There will also be a Gulf of Mexico Symposium and numerous contributed papers. Other enticements include a bourse, the AMU Auction which is a treasure mine of literature, a Texas style President's Reception, A Fiesta Dinner at the Houston Museum of Natural Science, a barbeque at the George Ranch, complete with cowboys and longhorns, and a Conch's Country Caper Banquet. Field trips fossiling to the Stone City beds, a freshwater trip to Houston area streams, a Surfside Beach collecting trip and picnic, or a trip to the University of Texas Marine Biology Cephalopod Labs in Galveston round out the exciting week host clubs Houston Malacological Society and Seashell Searchers of Brazoria County have planned.

The Annual Meeting in Houston will be held at the Hyatt Regency in downtown Houston and runs from Sunday through Thursday, July 9-14, 1994, just a few days before the COA Convention begins on Sunday, July 17 in Corpus Christi. Dyed-in-the-shell enthusiasts could make a marvelous two-week vacation of it — all this conchological and malacological exposure and the Great State of Texas all in one. And what a fine place Texas is for a family vacation. Swimming and shelling, historical and anthropological sites, amusement parks, shopping, museums, Padre Island National Seashore nearby, (in Texas miles, that is), and the added attraction of neighboring Mexico. Y'ALL LET'S GO!

For more information and registration forms, contact Constance E. Boone, President, Malacology Department of the Houston Museum of Natural Science, 1 Hermann Circle Drive, Houston, TX 77030. TEL: (713) 639-4677; FAX: (713) 523-4125 HOME: (713) 668-8252

Want to know more about AMU? Watch for an upcoming article in the June *American Conchologist*.



Let COA start your day! Order one (or more) of these attractive mugs from Property Chairman Hank Foglino and drink your morning coffee with us. Photo courtesy of Jordan Star, Long Island Shell Club

BOARDTALK.....

From COA Treasurer WALTER SAGE: We thank all of you who have paid your 1994 membership dues. Reminders have been mailed to the 350 or so who have not yet renewed for 1994. If you know of any member or member club not paid for 1994, please encourage these parties to send payment to the treasurer as soon as possible, P.O. Box 8105, Saddle Brook, NJ 07662. Getting dues payments in promptly helps on bookkeeping and saves COA the cost of sending reminders. We also remind all members of the sales items available from Property Manager HANK FOGLINO, 4 Trent Court, Smithtown NY 11787-2166. These include COA lapel pins — \$4.00; COA History — \$2.00; 20-year Index to the AMERICAN CONCHOLOGIST/COA BULLETIN — \$4.00; COA coffee mugs — \$6.00. All these items are mailed postage paid. Back issues of AMERICAN CONCHOLOGIST and its predecessor, COA BULLETIN, are available from Hank as well. Prior to 1985, the issues are \$1.50; 1985 to current issues are \$3.00 each.

From Membership Director BOBBIE HOUCHIN: My thanks to the many who have paid their 1994 dues. The reminders to the unpaid members was mailed in early February.

And thanks for your continued support in getting new members by passing on the COA membership brochure enclosed in the December *American Conchologist*. This extra effort on your part is appreciated.

An "Invitation to Join COA" mailing was sent out in January, and there are new members' applications coming in from this as well as from the shell shows and other efforts.

OOPS!

In the December issue of *American Conchologist*, in Sue Stephens' article, "The Worldwide Genus *Chicoreus*," the captions on Sue's drawings were switched during printing. Of course Sue knows the difference between *Chicoreus* (*Siratus*) *alabaster* (Reeve, 1845) and *Chicoreus* (*Chicopinnatus*) *orchidifloris* (Shikama, 1973). But the printers don't.

Also, on page 21, in Bob Purtymun's "Notes from the Past," a caption was inadvertently dropped. The existing caption belongs to the upper picture. In the lower picture, the shells are reversed, so the the first specimen on the left is *Strombus dentatus* and the last one on the right is *Strombus gibberulus*. We're sorry, Bob. There were gremlins aboard.

COA Convention registrants who are authors are invited to an autograph party during coffee break on Wednesday, July 20. Please let us know if you plan to be on hand to sign copies of your book (s) so we can plan space arrangements.

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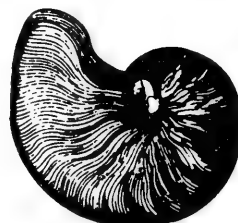
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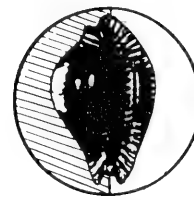
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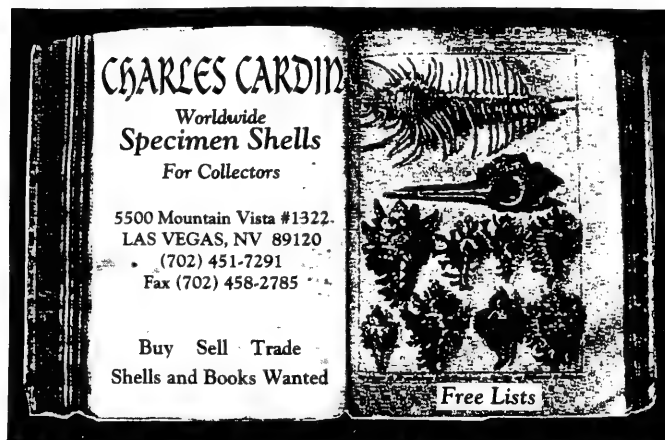


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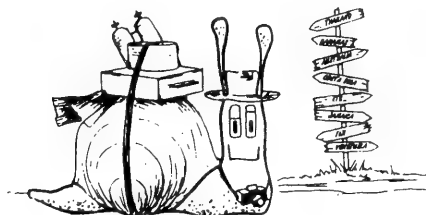
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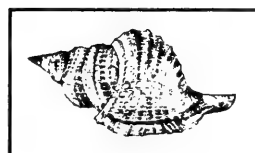


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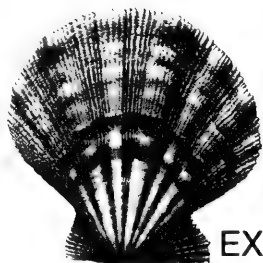
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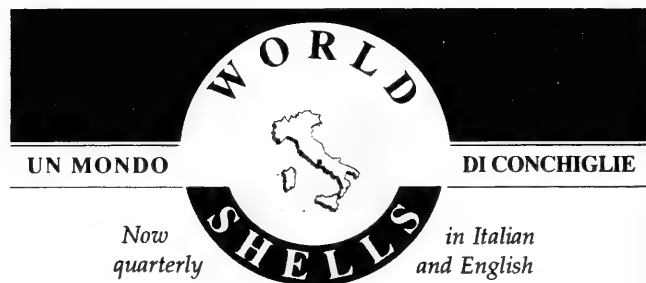
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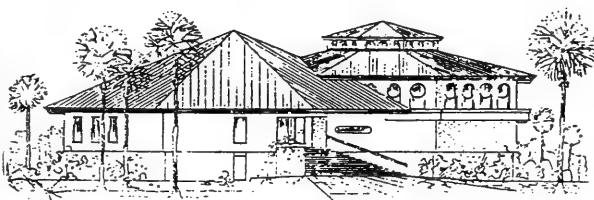


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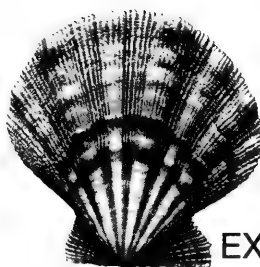
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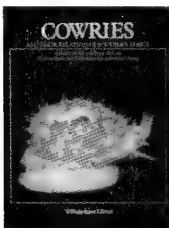
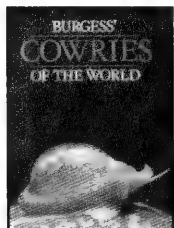
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VOL. 22, NO. 2

JUNE 1994



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COVER: Kristina Joyce (646 Main Street, Concord, MA 01742) is a woman of many enthusiasms, which have long included shells and other marine subjects. Since her visit to Russia in 1989, another of the "Many Worlds of Kristina Joyce" has been Russia, its shells and its art and culture. On our cover, she has combined these in gouache: portraits of trochons from Russian trawlers against background motifs reminiscent of Russian painting on functional objects. We think the four make a very special collection in themselves. The shells are: (clockwise from upper left) *Trochus fraseri* Knudsen, 195, off West Africa; *Boreotrochus alaskanus* (Dall, 1902), northern Pacific; *Nodulotrochus dalli* (Kobelt, 1878), northern Pacific; *Boreotrochus clathratus* (Linné, 1758), northern Atlantic.

PRESIDENT'S MESSAGE

These past two years have been fraught with challenges — both as President of COA and on a personal level. I am very pleased in the progress made in increased membership and promotion of COA to people everywhere.

Our magazine, the **American Conchologist**, is one of the premier publications in this field. The Educational Grants Program continues to fund and encourage students in malacology. The COA Trophy is sought by participants in up to twenty shell shows a year.

And the annual convention — it gets better by the year! I hope to see many of you in Corpus Christi this July and in San Diego next year.

In closing, I wish to thank you for the privilege and the honor of serving as your president. I also wish to convey my sincere appreciation to you for the support and caring extended to me.

Best wishes to the new officers who will take the reins for 1994-95.

Sincerely,
DORIS

On behalf of COA members worldwide, thanks, Doris, for a great two years! You have really taken us giant steps forward! A fine constitutional revision, a working set of guidelines for the COA board of directors, a new convention guidelines book, and increasingly sound fiscal policies are among the accomplishments of your tenure. — Ed

THE TEXAS CONNECTION 1994 COA DIVE TRIP

The 1994 COA Dive will be a two tank dive off the oil platforms in the Gulf of Mexico, about 15 miles out. It will be a six-hour trip, meeting at the dock at 2 in the afternoon, on Saturday, July 23. We will be diving in 70' - 80' of water, with 50' - 75' visibility, and a water temperature of 83 degrees. There won't be a lot of shells, but lots of fish and coral to see. We will be on an 85' boat with two outdoor freshwater showers and coolers available for storing whatever you want to bring to eat or drink. Soft drinks and Gatorade are furnished. A van is available for the trip from the hotel to the dock and back, but if we have enough cars, we can cancel the van.

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A NEW CARIBBEAN RECORD FOR A CENTRAL AMERICAN LAND SNAIL

by Richard L. Goldberg

Figure 1: *Praticolella griseola* (Pfeiffer, 1841). Negril, Jamaica. 10-11mm. [Photo by Richard Goldberg]



The introduction of non-native and mainland species of land snails to the Caribbean islands has become a frequent phenomenon in recent years. A number of adventitious land snail species, whether they have been accidentally or deliberately introduced, have become firmly established in new areas in the Caribbean. Most of these species have been introduced, over a period of time, through commerce.

A wide variety of species have been recorded outside their historic known ranges. Members of the Bulimulidae, Zonitidae, Urocoptidae, and a number of Subulinidae are represented. Nor are these introductions to the Caribbean limited to smaller species. The spread of the large Cuban camaenid, *Zachrysia provisoria* (Pfeiffer, 1858) to the Bahamas, Virgin Islands, and the mainland is well documented. It has, in fact, become an agricultural pest in south Florida.

The pressures of introduced species on native flora and fauna seem to be greater in the South Pacific islands than they are in the Caribbean. The most infamous snail introduction in the Pacific is that of *Euglandina rosea*. This carnivorous snail, deliberately introduced to control the spread of the large African snail, *Achatina fulica*, has more responsibility for threatening and destroying many endemic snail species than any other factor. Yet there is no solid information linking the introduction of snails in the Caribbean with the depletion of native species, although the introduced species probably are competing with the native species for habitats and food sources.

During a field trip to Jamaica in 1988, I found a very large population of helical snails living on a dry, grassy, empty patch of ground, just behind the beach, adjacent to the cultivated grounds of a B-class hotel in Negril, Jamaica. The snails were living gregariously on leaf litter, attached to grass stalks, and on the property fences low to the ground.

The identity of this snail eluded me for some time. I compared it to every similar snail recorded from Jamaica, but made no match. Realizing that this was an introduced species, I first assumed it was the wide-spread Asian *Bradybaena similis*, to which it had some similarity. Its introduction to the Caribbean is well known, so it was not out of the question that this could be another Caribbean record. I was not at all convinced, though, that the identification was correct. Since that time, the lot has sat, nameless, without any further investigation.

Recently, after recognizing a similar group of shells in a lot of Mexican polygyrids, I resurrected the Jamaican shells. They turned out to be identical to *Praticolella griseola* (Pfeiffer, 1841) a species indigenous to Central America. Vera Cruz, Mexico is the type locality of this species. Its known range on the mainland is from as far south as Nicaragua, up to Brownsville, Texas in the north. It has also been introduced to Key West, Florida. Caribbean records for this species include Cuba, Hispaniola, Cayman Islands, and the Bahamas.

The species is quite variable throughout its geographical range. It can be banded, unicolor, or variably marked, as in the case of the Negril shells. Almost half of the Jamaican shells of *P. griseola* were without any pattern at all.

It is interesting to note that, as with *P. griseola* from other Caribbean areas, the Jamaican snails are restricted to cultivated areas. I do not think that this species was introduced to Jamaica directly from Mexico. I suspect that it was brought in on plants imported from Florida or one of the other Caribbean islands, since the Bahamian government does not regulate or inspect the import of individual plant shipments. I have found only this one population on Jamaica.

Praticolella griseola now includes Jamaica in its ever-widening geographical range.

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Figure 1. *Epioblasma obliquata perobliqua* (Conrad, 1836). St. Joseph River, IN (OSUM)(FE), 32 mm. OSUM = Ohio State University Museum of Zoology. FE = Federally endangered.

NORTH AMERICAN FRESHWATER MUSSELS

PART I. THE QUICK AND THE DEAD

by Thomas D. Watters

In 1987, in a tiny creek in northwestern Ohio, I found a live *Epioblasma obliquata perobliqua* (Fig. 1). In fact, I had been contracted to find it. In a thorough survey of this creek and adjacent ones over several months, I found only the one. When I returned it, I knew that I had just seen one of the rarest animals on Earth. I also knew that I may be the last person ever to see this species alive again. Once widely distributed in the Wabash and Maumee River systems, it now occurred in less than ten miles of this creek, and nowhere else on earth. What had happened to this mussel? How had it come to the brink of extinction?

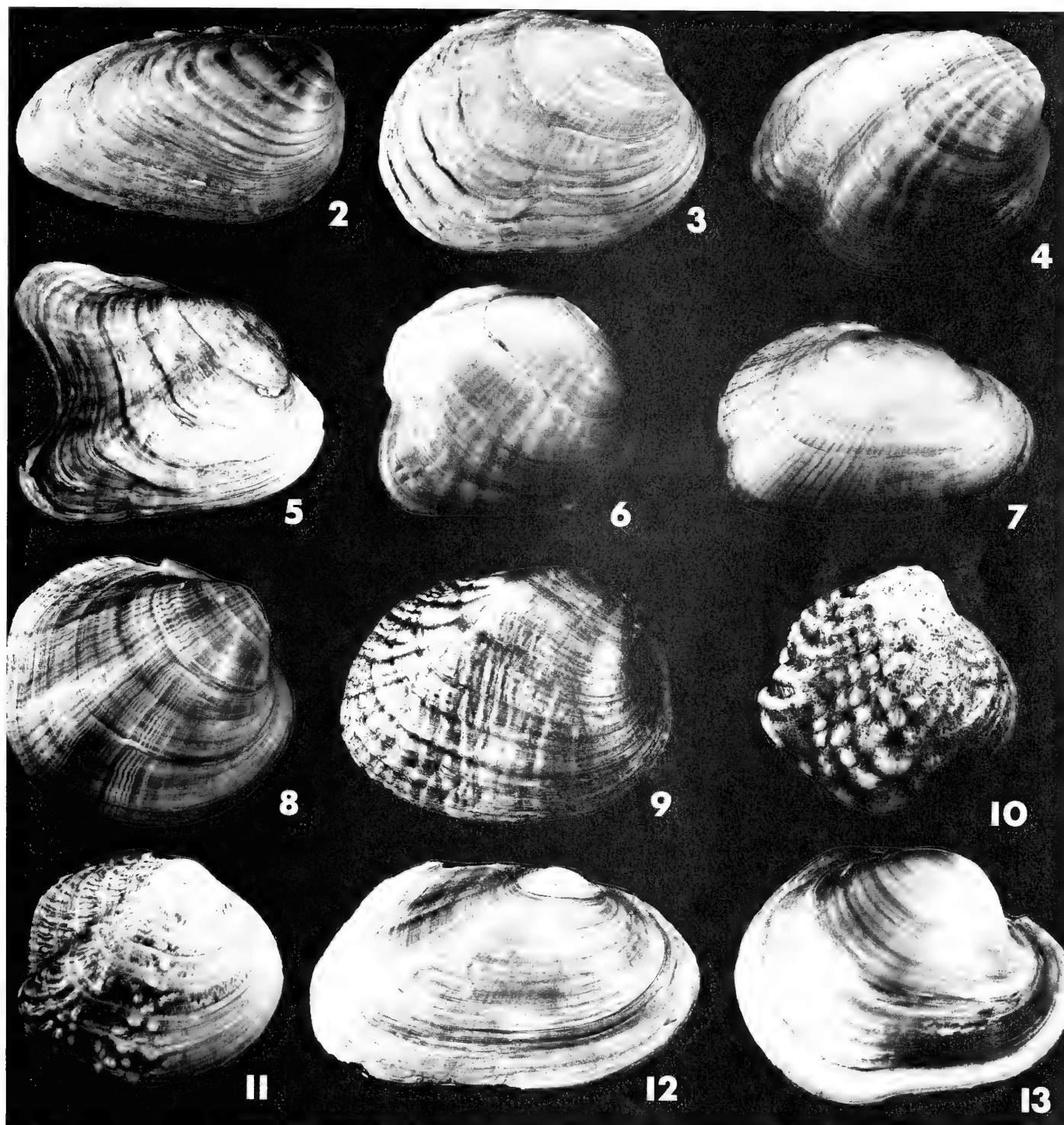
That species is one of many that face almost certain extinction in the very near future. Although 51 freshwater mussel taxa are now federally endangered, many more are even rarer. But most people are unaware that they even exist. After all, they're not majestic like California condors, or awe-inspiring like blue whales, or warm and fuzzy like pandas. They are every bit as much a species as those celebrated distant cousins, and have the same right (if such a thing exists) to survive. But within the past 200 years, dozens of native freshwater mussels have become extinct, and others are certain to follow. Every one of them may have been driven to this point of no return by the actions of man.

In order to appreciate how man has affected mussels, we need to know a little of their basic biology and history. Freshwater mussels belong to the order Unionoidea, and in North America they are represented by two families. The Margaritiferidae are few in

species number, with only five taxa in North America. The other family, the Unionidae, has perhaps 300 species. Throughout this series I will refer to our freshwater mussels as unionids, although they also have been called clams, mussels, and naiades. They are neither clams nor mussels, but those appellations are so entrenched in our vernacular that it is useless to try to suppress them. They are believed to be descendants of the once diverse marine Trigoniacea, today represented only by *Neotrigonia*. They have been here at least since the Triassic, and no place on earth has as many species as North America.

Living in rivers is very different from living in the ocean, and not just for physiological reasons. The world of a unionid is a linear one, with a constant current. Droughts and flood are the norm. Temperature is much more variable than in the ocean. In general, it's a rough life. Environmental rigors notwithstanding, one of the greatest problems to unionids is how to distribute their offspring, within and between rivers. The next river may be only a mile away, but the intervening dry land is insurmountable for a unionid to cross.

Unionids, like all bivalves, do not copulate. The male liberates his gametes into the water and "hopes" they find a female. But because rivers have currents, and sperm cannot possibly swim upstream against them, that female must be downstream. When she releases juveniles, they too will be carried downstream. Eventually, most rivers reach the sea, and that would be the end of these freshwater mussels. But we have unionids distributed in rivers and creeks across much of North America. Why are they still here?



A few of North America's rare and endangered freshwater mussels. Figure 2. *Pleurobema clava* (Lamarck, 1819), East Fork, West Branch, St. Joseph River, OH (GTW)(FE), 86mm. Figure 3. *Epioblasma torulosa rangiana* (Lea, 1829), Big Darby Creek, OH (GTW)(FE), 83mm. Figure 4. *Epioblasma propinqua* (Lea, 1857), Tennessee River, AL (OSUM)(EXTINCT), 48mm. Figure 5. *Epioblasma flexuosa* (Rafinesque, 1820), Wabash River, IN or IL (OSUM)(EXTINCT), 83mm. Figure 6. *Epioblasma stewardsoni* (Lea, 1852), Tennessee River, AL (OSUM)(EXTINCT), 36mm. Figure 7. *Epioblasma lenior* (Lea, 1843), Stones River, TN (OSUM)(EXTINCT), 27mm. Figure 8. *Epioblasma personata* (Say, 1829), Ohio River, state unknown (OSUM)(EXTINCT), 47mm. Figure 9. *Lemiox rimosus* (Rafinesque, 1831), Duck River, TN (GTW)(FE), 56mm. Figure 10. *Quadrula stapes* (Lea, 1831), Tombigbee River, AL (OSUM)(FE), 42mm. Figure 11. *Quadrula sparsa* (Lea, 1841), Powell River, TN (OSUM)(FE), 58mm. Figure 12. *Lasmigona decorata* (Lea, 1852), Stewarts Pond, NC (OSUM)(FE), 76mm. Figure 13. *Potamilus capax* (Green, 1832), St Francis River Cutoff, AR (GTW)(FE), 108mm. GTW — collection of the author.

NORTH AMERICAN FRESHWATER MUSSELS, cont'd

During the evolution of unionids, they "happened" on the solution. They have a unique larva called a glochidium (pl. glochidia) that is able to parasitize fishes, and in some species, amphibians. The fertilized eggs are moved to specialized portions of the female's gills called marsupia. Here they develop into glochidia. When they are mature they are released into the water. A few of these come into contact with a fish, the host, and encyst on the gills, fins, or skin. Here they live off the host's tissue, as well as their own, and eventually metamorphose, encyst, and drop off the fish. Recent studies have placed the odds of a glochidium completing this cycle at 4 in 100,000. This is an obligate part of their life cycle — they cannot bypass it if the host is absent. The important point is that while they are on the fish, they are being taken wherever their host is going — upstream, downstream, into tributaries, maybe even into whole other rivers during floods. Thus the unionids have hitched their wagon to a horse in the form of a host. But it is apparent that not just any fish will do. Certain species of mussels can only parasitize certain types of fishes. If they attach to an unsuitable host, the fish's immunological defenses kill the glochidium. This has important implications.

If one wishes to save or manage a unionid species, it is not enough just to make sure that water and substrate quality are sufficient for the mussel to live. You must also save or manage the host, which complicates the problem greatly. Unfortunately, for most species, we just do not know the host's identity. This is particularly true of endangered species. If the host is absent, even the healthiest unionid population will never be able to reproduce, and the individuals will just grow old and die without offspring. We suspect that this is happening to several species right now. In many cases, man has altered the lakes and rivers to such an extent that the composition of fishes has changed, and the proper hosts are no longer present. The host itself may have been driven to extirpation or extinction. In any case, the unionids' novel "solution" to their problem of distribution may have become part of their downfall.

Man has also modified the habitats of unionids in many ways. Like most bivalves, unionids feed by straining microscopic material out of the water with their gills. Although unionids can tolerate natural levels of sediment or silt in the water, man releases much more than what these animals can survive. If the silt does not suffocate them outright, the high levels may interfere with respiration and cause the death of glochidia in the marsupia. Such silt enters the water from agricultural and construction runoff. In addition to silt, agricultural runoff often contains pesticides, herbicides, and fertilizers that stress or kill unionids. Figures 2 and 3 illustrate two species that are now very rare because of these problems. Many states now encourage farmers to maintain a border, called a riparian corridor, along streams to act as a filter, and advocate changing to no-till practices. In areas where mining takes place, coal fines and dirt often wash into the rivers, where they, too, smother the animals. Furthermore, water leaving strip-mined land is often acidic. I have witnessed streams in mining land with a pH of 2 — that of vinegar — far below what any unionid could survive. In many areas sand and gravel are removed from the river for construction. These practices not only kill unionids in the immediate area, but stir up sediments that are carried far downstream. In some places, miles of river bottom literally have been removed, along with the mussels in it.

By far the greatest cause for the demise of mussels is the damming and impoundment of rivers. Many species were adapted to the riffles of large rivers such as the Ohio, Coosa, and Tennessee Rivers. These riffles are long gone, submerged under many feet of water. The silt that was once carried away by the swift currents

now rains down on the mussels. Highly oxygenated water becomes anoxic. Bottom temperatures may not rise enough to allow reproduction to occur. Host fishes die, leave, or are prevented from moving by dams. The species illustrated in Figures 4 to 8 were river forms living in shallow riffles and runs. All are believed to be extinct. They were as good as gone the day the dams were completed. The species in figures 9 to 11 are on the brink of extinction for similar reasons. As an example, think of the Falls of the Ohio near Louisville in the early 1800's. Here Rafinesque, the eccentric describer of many North American unionids, had his epiphany. Perhaps as many as 80 unionid species occurred here — more than any other place on Earth. Most people are amazed to find that the average depth of the Ohio River at that time was one foot, and that you could walk across the river on the backs of mussels. But the Falls, and the mussels that lived there, are now buried under many feet of water and silt.

These represent the indirect destruction of mussels by man. Just as we did in the past, we are today still purposefully killing them in incredible numbers. Three episodes stand out: the Pearl Rush, the button industry, and the cultured pearl industry.

The Pearl Rush began in 1857. In that year, in a New Jersey stream, a pearl was found in a mussel that was sold by Tiffany's for \$2,500 — a lot of money in 1857. Soon, every man, woman, and child was shucking every mussel to be found in search of easy riches. Entire streams were depleted of mussels. Despite warnings from the U.S. Fish Commission of severe overharvesting, no effort was made to halt their collection. We have no idea how many millions of mussels were killed, but by the time the frenzy died down at the turn of the century, the craze had spread from New Jersey to the Rocky Mountains. Sharply falling prices as the result of a glutted market eventually halted the Pearl Rush.

Already severely depleted, the mussel beds of North America were hit again. In 1891 the German immigrant John Boepple founded a factory in Muscatine, Iowa that made mother-of-pearl buttons from freshwater mussels. The success of the business inspired others to follow suit, and button factories sprang up across the nation. By 1916, the \$12,500,000 industry employed 20,000 people. The unregulated harvest was astonishing. As much as 1,800 lbs of living mussels were removed from some rivers per day. In the Mississippi River, 750,000 lbs were removed in six years. Slow growing, with little recruitment, the mussels could not keep up. At these rates, mussels are not a renewable resource. However, the invention of the plastic button made this industry obsolete by the end of the 1940's. For a time the mussels were left alone. But it was not to last.

In the past two decades, mussels have again become the target of commercial collecting and overexploitation throughout much of the United States. Tons of mussels are harvested for making pearl beads or nuclei. These are shipped overseas and used to seed marine pearl oysters, which form gem-grade pearls from the beads. These cultured pearls are then harvested and sold throughout the world. Most of the cultured pearl you buy is actually a mussel bead from right here in North America, with only a thin veneer of marine pearl nacre over it. The main source of beads for this multi-million dollar industry is mussels from the Tennessee, Wabash, Cumberland, Mississippi, and other rivers. These are collected by much more efficient means than the methods of the early 1900's, and beds are quickly and easily overharvested. In the Tennessee River alone, in one year, 4,750 tons of mussels were killed. Many states that have allowed commercial harvesting of mussels have had their stocks depleted past the point of profitability to the industry, and harvesters are forced to find other sources for mussels. These include poaching mussels from rivers closed to

harvesting. The considerable money that can be made poaching these beds has made this a chronic problem in some states. Ohio, for instance, is closed to commercial collecting, but in the past two years we have seen a dramatic increase in illegal collecting. Poachers with as much as two tons of living mussels have been caught in just one bed. Working under cover of darkness, these criminals slip into and out of a river often unnoticed. Wildlife officers, already undermanned and overworked, simply cannot be everywhere.

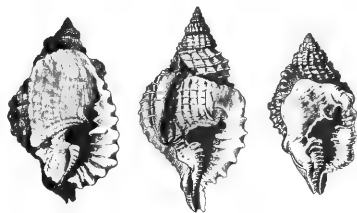
As if this was not enough, we now have a new problem. The zebra mussel was found in the Detroit River in 1988, apparently the result of a cargo ship emptying ballast water it had taken on in Europe — along with planktonic zebra mussel larvae. Today they have spread throughout most of the Great Lakes, the Mississippi, Ohio, and Tennessee Rivers, and many other places. Zebra mussels attach to unionids and just about anything else. As many as 10,000 zebra mussels have been found on one unionid. Perched atop the posterior of the unionid shell, they remove food from the water before it can reach the unionid, remove male gametes before they can encounter a female, and result in the beaching of unionids

during storms. Most of the unionids in western Lake Erie have been extirpated by these exotics. Largely a lake species, it may not do well in running rivers. It is a sad irony that we have converted these once free-flowing rivers into a series of impounded reaches — perfect for zebra mussels. How much of our already stressed unionid fauna will be eliminated by zebra mussels is unknown, but many experts fear the worst.

Freshwater mussels are one of North America's main claims to fame in terms of natural history. Colleagues in other countries get all misty-eyed when I mention such Hallowed Places as "Cahaba River, Clinch River, Escambia River, Wabash River...." I have a creek just 20 miles away from where I sit that contains more species of mussels than the entire continents of Europe and Australia combined. It is a resource and a heritage that is rapidly slipping away.

Next time: Part II — **Identification, collection, and the art of Zen malacology.**

The author wishes to thank Dr. David Stansbery, Ohio State University Museum of Zoology, Columbus, Ohio, for permission to photograph many of the specimens used in this article.



1994 SUMMER & FALL SHELL SHOWS AND MEETINGS

by Donald Dan, COA Awards Chairman

- | | | | |
|------------|--|-------------|---|
| Jul. 9-14 | American Malacological Union Annual Meeting , Houston, TX
Constance E. Boone, President
Malacology, Houston Mus. of Nat. History
1 Hermann Circle Drive
Houston, TX 77030
(713) 639-4677 | Aug. 20-21 | Panama City Shell Show , Panama City, FL
Jim & Linda Brunner, P.O. Box 8188
Southport, FL 32409
(904) 265-5557 |
| Jul. 16-17 | Keppel Bay Shell Show , Yeppoon, Queensland, Australia
Jean M. Offord, 277 McDougall St.,
N. Rockhampton, Qld. 4701, Australia
(79) 283-509 | Sept. 17-18 | Central Florida Shell Show , Orlando, FL
Larry Stiles, 1505 N. Carolwood Blvd.
Fern Park, FL 32730
(407) 834-2176 |
| Jul. 18-23 | Conchologists of America Convention , Corpus Christi, TX
Jean Roe, COA Convention '94
P.O. Box 45
Portland, TX 78374
(512) 643-2056 | Sept. 17-18 | International Shells & Fossils Bourse , Ottmarsheim, France
Michel Rioual, 2 Rue des Vergers
68490 Ottmarsheim, France
89-26-16-43 |
| Jul. 30-31 | Townsville Shell Show , Townsville, Queensland, Aust.
Glenda Rowse, 19 Farrell Street
Kirwan 4814, Queensland, Australia
(77) 732-718 | Oct. 14-16 | Annual German Shell Fair , Hamburg, Germany
Klaus Passan, Friedrichsberger Str. 63
22081 Hamburg, Germany
(40) 294-669 |
| Aug. 5-7 | Jacksonville Shell Show , Jacksonville Beach, FL
Elizabeth Hunter, 6362 David Drive
Jacksonville, FL 32210
(904) 786-6845 | Oct. 29 | British Shell Collectors' Club Shell Show , London, England
Kevin Brown, 12 Grainger Road
Isleworth, Middlesex TW7 6PQ, England
(81) 568-8333 |
| Aug. 13-14 | Cairns Shell Show , Cairns, Qld., Australia
Barbara Collins, House of Ten Thousand Shells
32-34 Abbott St., Cairns 4870
Queensland, Australia
(70) 51-3638 | Nov. 5-6 | Philadelphia Shell Show , Philadelphia, PA
Al Schilling, 419 Linden Ave.
Glenside, PA 19038
(215) 886-5807 |
| Aug. 18-20 | Jersey Cape Shell Show , Stone Harbor, NJ
Jersey Cape Shell Club, P.O. Box 124
Stone Harbor, NJ 08247
(609) 653-8017 | Nov. 18-20 | North Carolina Shell Show , Wilmington, NC
John Timmerman, 32 Jeb Stuart Drive
Wilmington, NC 28412-1700
(919) 452-0943 |

LETTERS

Thank you for the wonderful specimen shell that I received as The Big Prize for winning the recent COA dues contest. I also very much appreciate the bonus *Conus bengalensis*.

Here is my personal top reason for paying COA dues promptly: Nothing is more frightening and emotionally upsetting than going to a shell-related event and being confronted by The Jersey Devil. This is a wild-eyed creature, with a loud shirt, that rants and raves about a continent full of procrastinating check writers. For the sake of all of us in the Northeast, I urge all members to renew promptly each and every year.

See you in Corpus Christi

Rich Kelly
622 So 8th St.
New Hyde Park, NY 11040

My mother, Evelyn Gage Gerisch (the thirty-fifth member of the Hawaiian Malacological Society) passed away on March 20, 1994. Evelyn, weakened with an old heart, suffered a series of falls, a broken hip, and pneumonia.

Her love of Hawaii, the sea, and its shells, is reflected in her writings, shell craft, and needle work. Evelyn's legacy to all shellers is the **Hawaiian Shell News**. She started this publication in March 1952 as a two-page mimeographed newsletter. It was typeset on the family Underwood portable and printed by a navy friend at Pearl Harbor.

Her family and some friends will enjoy shell craft panels created of micromollusks or by a delicate hand on petitpoint. Her family are great-grandsons Brandon and Jared Schau, granddaughter Vivian (Chris) Schau, and grandson Reginald P. Gage, III, daughter-in-law Sandra Gage, and myself.

As a shell collector and an indulgent parent she chauffeured neighborhood children to near and distant beaches. Later at her Kualoa beach home she welcomed her sheller friends with open arms, refreshments, towels and a collecting tip or two. Always the compulsive volunteer, Evelyn served the HMS as its Secretary, Chairman of the Editorial Committee, Chairman of the shell auctions and sales, and gofer this and that. She enriched the lives of all she touched.

Her ashes rest at Waikoko, a magnificent valley beneath the multiple 1200 foot water cascades of Mt. Waialeale, on Kauai.

Reginald P. Gage, II
P.O. Box 428
Kalaheo, HI 96741

RUSTY SHELL REMEDY — This one's been doing the rounds for years now, appearing in various shell publications, even in San Diego's **Festivus** and then in **Hawaiian Shell News** a year or so ago. It's the Amway product, "Redu," a rust remover for white fabrics. Your editor has a container of the stuff in her laundry room that's been there at least ten years! But the thing about it is, it does work. It takes off the rusty colored stains that so often mar the appearance of an otherwise beautiful shell. Larry Buck in the **Festivus** article advocates using the product only on non-glossy shells by dissolving a tablespoon of Redu in two cups of warm water. The removal time varies, so he recommends that you experiment on your "dogs."

CYPRAEA À LA KING?

Do you ever consider preparing your shelling take for the table? Yecchhh! you say? Well, know that Man has been eating mollusk since before he was Man. One fringe-group paleo-anthropologist (a woman, of course) even has it that we evolved into Man in the hot Pleiocene, keeping our cool and staying safe from water-hating big-cat-type predators by hanging out along the shallows of Africa's oceans. And what did we eat here? Why we munched on easily available mollusks, of course, with a salty seaweed salad on the side. Though greatly prized by other cuisines, the vast majority of mollusks are not in culinary vogue in the U.S. just now, yet they're excellent sources of protein and contain little or no saturated fat. If only they weren't so dangerous from contaminants and microorganisms!

We all know how delicious abalone, scallops, clams and mussels are, and many of us have acquired a taste for conch, via fritters, chowder and steaks served in the Keys and the islands. Some few of us may actually have supped coquina broth. But whelks and winkles get tossed, along with the tulips and tritons. Much of what we like is dictated by what is served us, and few species of mollusks are available in large enough supply in the western world to make fishing them commercially feasible. But mariculture studies are underway now that will make the Phylum Mollusca a common source of the future. Conchs and giant clams are two groups that are under intense investigation and experimentation right now. Others are sure to join them, in the lab and on the table. Bon appetit!

In Memoriam

Jack Becker
Bonnie Chiarottino
Marilyn Cox
Stanley Madow
Thomas Dailey McHarg
John Paduano
Ann Quinlan

VALE: Stanley Madow
March 10, 1994

Joy and I first met Stan at JFK airport in July 1991. He was there with Helen to pick us up for the COA convention on Long Island.

We felt instantly at home, despite completely different backgrounds and — would you believe? — language differences. On quite a few occasions, startled expressions issued from both sides when words were used that may have been acceptable in one country but weren't in the other.

We were honored to have known him and will surely miss him. He was truly one of God's chosen children. Happy shelling and good tides, Stan.

Joy and Ed Beulke (L.I.S.C. and Morwell, Australia)

"Rounding Up the Strays": The Effects of Aquaculture on the Genetics of a Natural Population

by Katy Metzner-Roop

When you mention shell collecting to most people they picture curio cabinets with beautiful conch and cowrie shells with little name tags in front of them. Here in South Carolina, we picture the piles of oyster and clam shells we accumulate in our back yards after winter roasts. Lowcountry residents consume bivalves by the bucket load; we even have an annual festival and crown an oyster queen.

As our population has increased, the demand for seafood has also risen. Overfishing has created a decline in the shellfish population in this area, as it has all over the world. Mankind is trying to ease the pressure on the ocean by beginning a farming program to grow shellfish for human consumption.

Among the most succulent is *Mercenaria mercenaria*, the hard clam. When they are young and served on the halfshell we call them littlenecks. As they get older they are referred to as cherrystones, and chowder-sized clams are quahogs. They are as valuable as they are delicious.

In 1980 the Trident Seafarms opened on Folly Island, south of Charleston. The farm imported *M. mercenaria* seed clams from Aquaculture Research Corporation (ARC) in Massachusetts. These clams had been selectively bred over several generations to be faster growing than wild clams. A shell coloration gene called *notata* was also bred into the clams to make them attractive and easily distinguishable. Clams that have two *notata* alleles are homozygotes and are a dark reddish brown color with white longitudinal bands. Those with one *notata* allele are heterozygotes and have thin zig-zag stripes.

For about ten years these "yankee" clams were grown in pens in the Folly River, a tidal creek of the Charleston Estuary. During the handling, harvesting and transporting of these clams some escape-ment of ARC clams was inevitable. It also seems likely that the ARC clams may have been able to spawn and hybridize with the local wild population of *M. mercenaria* that inhabit the creeks as well.

The farm started to shut down in the late 80's, and any remaining pens were removed after Hurricane Hugo came through in 1989. But has there been any lasting effect on the natural clam population? My mission, if I chose to accept it, was to track down any ARC clams that may have escaped and to determine if they had spread their genomes to the native clam population across the marsh.

Starting in March of 1992, I examined seven samples of over 300 individual clams each: large and small individuals from the site of Trident Seafarms itself and from two of its former grow-out sites, plus small clams only from a fourth site where no known aquaculture had occurred. I looked for the presence of *notata* markings on the "small" individuals (less than 50 mm), but because shells tend to wear and darken with age, I did not look for the markings on the "large" (greater than 50 mm) individuals.

To determine the genotypes of the individuals, I performed starch gel electrophoresis. I broke open the shells with either a hammer or a screwdriver, and I froze pieces of the siphon tissue. The gel is like really thick jell-o, but you wouldn't want to eat it. It is made of starch with lots of chemicals included. I cut holes in it and put the clam tissue into the holes. By running an electrical charge through the gel, I cause the alleles to separate out. Then I apply a stain, which makes the alleles more visible and easier to distinguish. By differentiating between the two allele types, I can read the genotype of the clam.

Previous studies on both ARC and native South Carolina clams have shown that certain alleles occur more frequently in the ARC clams. These alleles were named by how far they moved when they were electrocuted during electrophoresis and by the chemicals that were used in the gel. We called the chemicals we used GPI for glucose phosphate isomerase. ARC clams show a high gene frequency of 0.195 for the allele we called "GPI 70" and a frequency of 0.027 for the allele we called "GPI 60." In these studies native South Carolina clams were found to have a low frequency (0.038) for the GPI 70 allele and did not show the GPI 60 allele at all. The frequency of the *notata* marking allele that is bred into these ARC clams is high (0.293). But other studies have shown that the *notata* allele is very rare in the wild (0.006 frequency). To summarize, I had three genotypes whose allele combinations and frequencies were different, and I could use this difference as a basis to determine into which groups the clams that I had collected belonged.

At the site of the old Trident Seafarms, I found 7 GPI alleles among 351 small individuals, giving a calculated gene frequency of 0.010. This is significantly higher than expected, suggesting some genetic contribution to the local population by the ARC clams. At the Little Oak Island grow-out site, I found two individuals that not only had the GPI 60 allele (indicating that they were ARC clams), but also had *notata* markings. This is a very significant finding, suggesting ARC contribution to this site as well.

My results indicated that, at least in some locations and some age classes, the offspring of ARC clams may still inhabit the waters of the Charleston Estuary. Whether this is good or bad depends on your perspective; some might consider this "stock enhancement," the way they add healthy trout to a river so that people may continue to fish even though the natural population may be depleted. Oftentimes this causes the local population to become healthier due to the influx of "new blood." Others, purists, consider adding a non-native species to be "genetic pollution," weakening the natural population and possibly causing their extinction. If the ARC clams can survive better in South Carolina tidal creeks, they might be able eventually to take over and drive out native clams. Most of my samples did not contain unusually high levels of the ARC genome. So, given the incredible numbers of clams that were cultured in this area and my mere two significant results, I believe it fair to say that aquaculture in Charleston has not affected the local population of hard clams significantly. This means that we should not worry too much about aquaculture harming the natural environment, as long as we are careful and treat the earth with the respect she deserves.

I must conclude by thanking the Conchologists of America for their generous funding of this research. I could not have completed my Master's Program without your monetary aid.

GLOSSARY:

Allele: Different versions of a gene. For example, the allele for brown eyes and the allele for blue eyes.

Homozygote: Everyone has two alleles for each trait. If the alleles are the same, you are homozygous.

Heterozygote: If your two alleles are different, you are heterozygous.

Genotype: Your combination of alleles. For example, your genotype could be heterozygous or you could be homozygous for blue eyes.

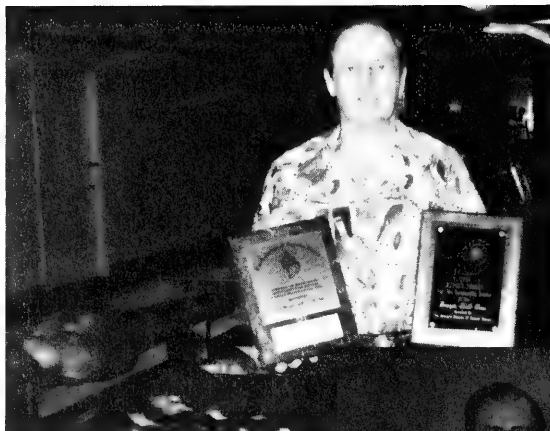
Genome: Essentially the same as "genotype."

Electrophoresis: the separation of any charged molecule by an electric field.

Gene Frequency: How often a particular gene or allele appears.



Randy Allamand, of Lake Placid, Florida, displays his COA Trophy from the Treasure Coast Shell Show, March 18-20, 1994. Randy's winning exhibit consisted of 23 feet of "World Cypraea." Nice, Randy!



1993-94 COA TROPHY WINNERS



Gene Everson, "Super-sheller," swept the board at the Greater Miami Shell Show in late January. He won the COA Trophy for his Self-Collected exhibit from the Solomon Islands, "12 is Enough." He also snatched the DuPont Award for his "Worldwide Fasciolaridae" exhibit. (This exhibit has been donated to the Sanibel Museum for display there.) Congratulations, Gene! He went on to Broward in February to win a second COA Trophy for his "Seashells of South Australia — Self-Collected." At the Georgia Shell Show in April, he won a few trophies, and at this writing, he's off to a late April St Louis Shell Show to sweep their trophy table. Good luck, Gene!

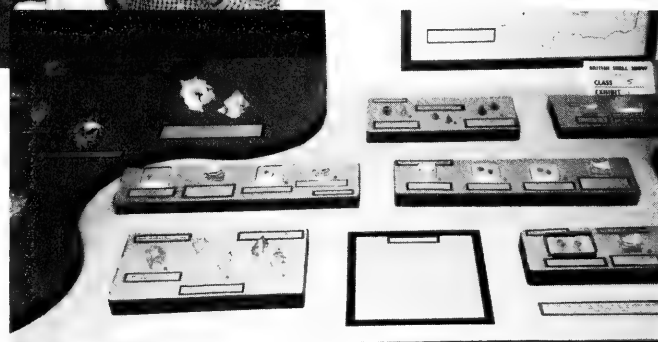


Jake and Sylvia Dominey won the COA Trophy at the January 21-21 Astronaut Trail Shell Show. Their exhibit featured the family Spondylidae. On display were 39 species, over 47 feet of them! The exhibit then won the American Museum of Natural History Trophy at Broward. Nice work, Jake and Sylvia! Photo by John Parkhurst

At the Naples Shell Show, Feb. 18-20, 1994, Kermit and Gloria Pearson won the COA Trophy. Their exhibit, pictured here, was entitled, "Small Shell Families of Kwajalein," and featured colorful pictures of living animals. Nice work, Pearsons!



A surprised and pleased Stanley Francis accepts his COA Trophy from Mrs. Celia Pain at the British Shell Collectors' Club Shell Show October 30. His winning exhibit, "Mediterranean Muricidae" is quite interesting — note that no cases are used.





We hear that judges of the 57th Annual Sanibel Shell Fair scientific division, Harry Lee and Gary Rosenberg, had to judge the show under the pressures of a tornado watch. But it's an ill wind that blows nobody good: this one blew the Sanibel COA Trophy Wayne and Donna Harland's way. Here they display the trophy, won for their exhibit on "The Cones of the Solomon Islands."



Don't Rob and Denise Masino look pleased? They should! They took the big prize at the Fort Myers Festival of Shells February 10-12, 1994. Their COA Trophy-winning exhibit was an outstanding display of the family Spondylidae.

Here's Carole Marshall at the Sarasota Shell Show, Feb. 18-20, 1994. Her exhibit, "Commercially Fished Scallops of the World," was colorful and highly educational, and it won for her the Sarasota COA Trophy. Congratulations, Carole.



Word is just in that Karen Couch of Newton, Kansas won the COA Trophy at the St. Louis Shell Show April 22-24. Her's Karen, standing in front of her exhibit, entitled "The Ends of the Earth." It featured cold water shells.

A crowd of over 1500 people viewed Dr. Gary Schmelz's COA Trophy winning exhibit at the Marco Island Shell Show March 10-12. Dr. Schmelz's exhibit featured fossils from four habitats to recreate an ancient environment.



Mark Johnson, happy with his COA Trophy, stands near his winning exhibit on "Sea Shells of Southeastern United States — North Carolina through the Florida Keys." Mark won his trophy for this exhibit of self-collected shells at the Nov. 11-14 North Carolina Shell Show at Wilmington. Photo by Victoria Wall

Louise and Doug Compton won the COA Trophy at the Georgia Shell Show April 8-10. Here's Louise near their winning exhibit, "*Strombus pugilis* Linné, 1758." The exhibit explains the life of the conch from egg to maturity, and in its many forms. Doug was ill and unable to be in the photo. Congratulations Comptons, and we hope you're feeling better soon, Doug.



A CHECKLIST OF THE MARINE SHELLS OF AMBERGRIS CAYE, BELIZE

by Casey Lamberton

Three years ago, I made a trip to Ambergris Caye, Belize, with a group of collectors for a week on the reef. Having never gone shelling with such a group before, I was unprepared for the camaraderie which was waiting for me as we assembled at Miami Airport. I was also unprepared to fall in love with the place. At best, this was to be a mid-life adventure; at worst, well, money lost and a bad sunburn, I suppose.

The tropical weather, white beaches, turquoise water, and friendly natives reassured me immediately that this was to be an enjoyable adventure among friends. That was when this wisp of melody started humming in my brain: "Bali hai...." And then the shells started creeping out to meet us — almost literally! They were in the shallows on the sand flats. They clung to the reef, the rocks, the pilings and seawalls. They were under rocks and at the entrances to octopus dens. We stuffed them into plastic bags encoded with collection dates and room numbers and nearly filled the hotel's freezer in five days.

We collected at exotic-sounding locations such as Mexico Rocks and Cayo Romero Lagoon by day and recounted at night our

tall tales of the ones that (usually) got away, while we checked out the local tourist shops for tee shirts and carved coral jewelry.

I came home with over 50 species to identify. Ah, to be snowbound that winter. Snow was not to be, but many evenings of poring over the shell books made the winter fly by. Soon only about six species remained a mystery. Tags read of warm memories — Rocky Point, Boca Ciega. "Bali Hai will call you...."

Last year I returned to Ambergris Caye — took a trip to the Blue Hole with its famous technicolor coral rim made famous by Jacques Cousteau, counted boobies in the Lighthouse Reef Rookery, and added several new areas to my collecting haunts. This time I traveled with two shelling buddies and introduced them to "...my own special place," while we made our own special memories. There was the afternoon the spotted eagle ray swam among the coral heads in 10 feet of water until we tired of watching it. And the day of the **FIRST HELMET!**

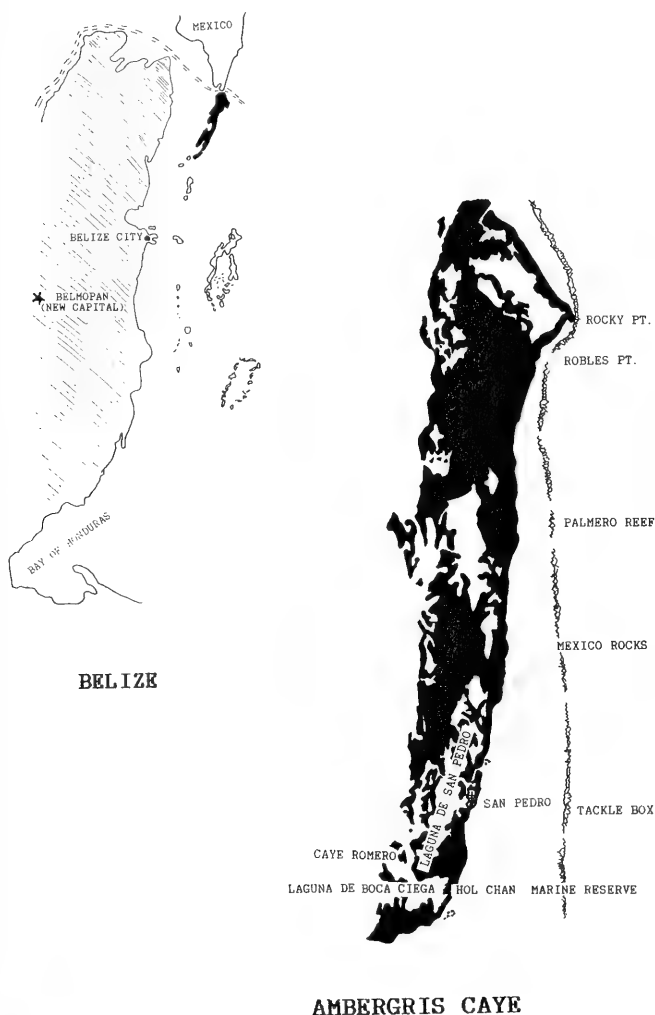
I warned my friends before leaving home that I had never taken a helmet (*C. tuberosa* or *C. flammea*), and that if I did I would probably drown in the excitement. It had been a quiet day of more looking than collecting when our guide suggested that there might be helmets about. "It's only about 12 feet; just follow the sand rills at the edge of the turtle grass." After a seemingly endless half hour of nothing but sand, there it was. I hovered. I took several breaths to saturate myself with oxygen, as if this were some ancient rite of passage. I dove. When my ears closed and threatened to balloon out through my eye sockets, I struggled back to the surface. Determined, I dived twice more before capturing my prize. The water was closer to 20 feet deep, my breath was gone, my snorkel, flooded. In the excitement of gaining the prize and regaining the surface, I broke water with a strangled victory shout! Our boat was about 30 yards away and empty. I looked toward shore, out to the main reef, up and down the coast. There we were, the boat and I, just the two of us in my moment of triumph. It seems I had surfaced as the others followed a Southern Ray across the flats, well out of earshot and not looking in my direction! Oh well, the helmet was mine.

Somehow along the way, Belize seems to have collected me! Plans are already in the works for another trip next year. Over the next few years, I hope to explore many more of the cays and bays. With over 150 miles of accessible reef running from the Mexican frontier to the Gulf of Honduras, I am sure to collect many more memories and species. "Here am I...Come to me...."

As my species list grew toward the 70 mark, I began contacting acquaintances from my first trip and friends from various shell clubs who had been to **THE REEF**, to find out what species they had found. Below is a compilation of all our lists for the area on or near Ambergris Caye. It is a good cross-section of the species available to collectors, be they beachcombers, snorkelers, or recreational divers. No one listed here SCUBA gear as a requisite; in fact, only the helmets and tritons require enough breath for a snorkeler to dive about 20 feet!

I am continuing to collect data from all parts of Belize, especially the areas of the northern frontier and the northern end of the bay of Honduras. To anyone who has collected in this delightful little country, and would care to share his data and/or his experiences with another Belize-lover, I say, "I would love to hear from you!"

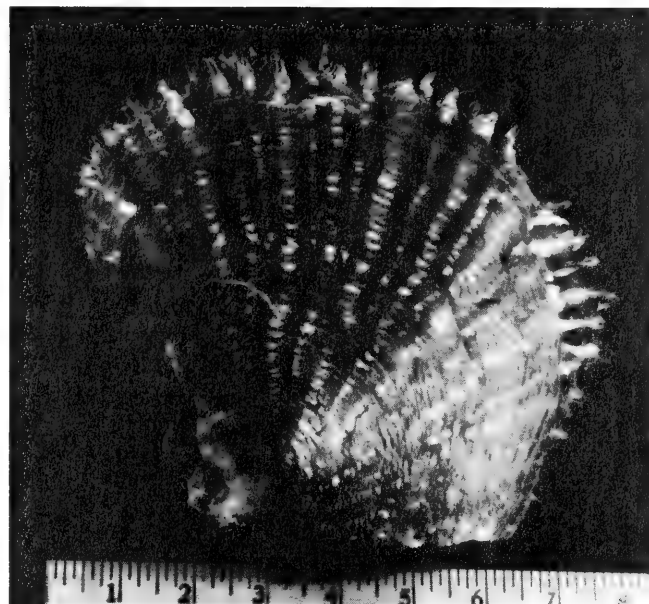
18 Bon Aire Circle #603 Suffern, NY 10901



Meanwhile, here's the list. Good shelling, and be careful not to be collected by Belize!

Acanthochitona pygmaea
Acmaea pustulata
Anachis mangelioides
Anomalocardia brasiliensis
Aspella paupercula
Astraea americana
Astraea caelata
Astraea phoebia
Barbatia cancellaria
Batillaria minima
Bulla occidentalis
Bulla striata
Cantharus tinctus
Cassiss flammea
Cassiss tuberosa
Cerithidea costata
Cerithium algicola
Cerithium atratum
Cerithium eburneum
Cerithium litteratum
Cerithium lutosum
Cerithium muscarum
Cerithium variabile
Charonia variegata
Chione cancellata
Chlamys ornata
Cittarium pica
Codakia orbicularis
Columbella mercatoria
Conus mus
Conus regius
Cymatium nicobaricum
Cymatium vespacium
Cyphoma gibbosum
Cypraea cinerea
Cypraeacassis testiculus
Diodora dysoni
Echininus nodulosus
Fasciolaria tulipa
Fissurella barbadensis
Glycymeris pectinata
Hipponix antiquatus
Hyalina albolineata

Ischnochiton limaciformis
Isognomon alatus
Laevicardium laevigatum
Leucozonia nassa
Lima pellucida
Lima scabra
Littorina lineolata
Littorina ziczac
Lucina pectinatus
Lucina pensylvanica
Melongena melongena
Mitra barbadensis
Modulus modulus
Morum oniscus
Murex pomum
Murex messorius
Nassarius albus
Nerita peloronta
Nerita versicolor
Neritina virginea
Nitidella nitida
Olivella perplexa
Pinctada radiata
Pinna carnea
Planaxis nucleus
Pleuroploca gigantea
Polinices lacteus
Prunum apicinum
Prunum guttatum
Prunum labiatum
Prunum roscidum
Strombus costatus
Strombus gigas
Strombus pugilis
Strombus raninus
Tegula fasciata
Tegula lividomaculata
Tellina fausta
Tellina listeri
Tellina magna
Tellina radiata
Thais deltoidea
Turbinella angulata
Vasum muricatum



NOT JUST BILGE WATER

by John Chesler

In June of 1993, while scuba diving at 60-70 feet off Boca Raton, Florida, I spotted a vivid flash of red. As I approached within 15 feet, the red disappeared. Without blinking, I swam to the spot, but could see nothing but sponges growing on top of one another. I finally realized what I was looking at was some kind of giant bivalve that was totally encrusted with sponge and very firmly attached to the reef. Of course I had forgotten my knife, and my dive buddy, Mary Bukstel, who had her knife, was 40 feet away. No matter what strange noises I made I could not get her attention, and I was afraid that if I left the spot where the shell was, it was so well camouflaged that I'd never be able to find it again. I removed one fin and stuck it in the reef as a marker and, trying not to swim in a circle, I went to get her knife.

When I brought Mary over, she screamed through her mouth-piece. What we had found was, we think, *Pinctada margaritifera* (Linné, 1758), the Black Lipped Pearl Oyster, a tropical Pacific Ocean shell, living off the coast of Florida. In 1992, Mary had found a similar one off Boynton Beach. Just how these shells got into the Atlantic Ocean, where they seem to have thrived, is pure conjecture, of course, but the most likely explanation is in a ship's bilge that was emptied before reaching port. The shell measures 8" and, I'm sad to report, did not contain a pearl.

7401 S.W. 7th Street, Plantation, FL 33317

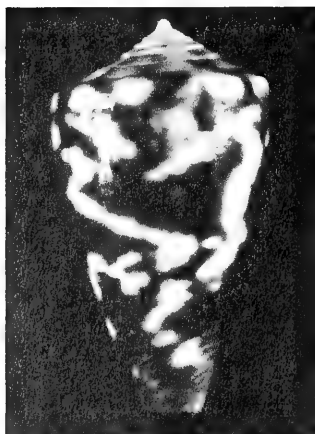
POISON BLACK OLIVES? No, not the sort you find on Greek salads, but the shelly sort; *Oliva vidua*, popularly known as the Black Olive, is poisonous to eat, whether raw or cooked. Another species, *Oliva bulbosa*, is known to inject its victims with a paralyzing neurotoxin, much like a cone shell. This same venom on human skin can cause a numbing and burning sensation, as well as internal poisoning. So the North Alabama Shell Club **Nautiloid** tells us (August 1993). And another thing you may not know: the **Nautiloid** makes fascinating reading because it is filled, each issue, with shelly tidbits like this.

TELL THEM THIS:

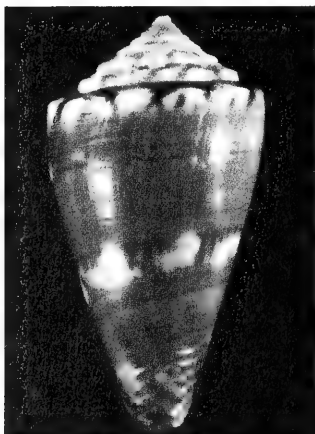
If you've ever done an educational shell talk, be it for seniors' groups, museum crowds or school children, you know that one question you're sure to be asked is "How big do they get?" and the other is, "How long does it take to make a shell that big?" Here's a specific answer for you: Giant Clams (*Tridacna* species) require about 20 years to reach maturity, at which point they're about 3.3 feet across.

BARCELONA, SPAIN will be the site of the 10th Spanish Congress on Malacology, September 13-16, 1994. Communications in English will be accepted. Write Departament de Biologia Animal (Invertebrats), Facultat de Biologia, Universitat de Barcelona, Av. Diagonal, 645, 08028 Barcelona, Spain. Tel (93) 402 1439 Fax (93) 411 0887.

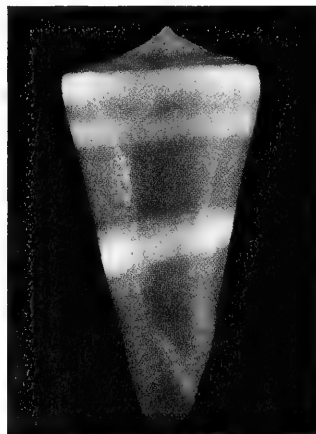
CARIBBEAN CONIDAE by Kevan and Linda Sunderland



Conus archetypus form
beddomei Sowerby, 1901.
20 mm. 10', Carriacou,
Grenadines, Lesser Antilles.



Conus archetypus form
brasiliensis Clench, 1942.
24 mm. 10', Espirito Santo,
Brazil.



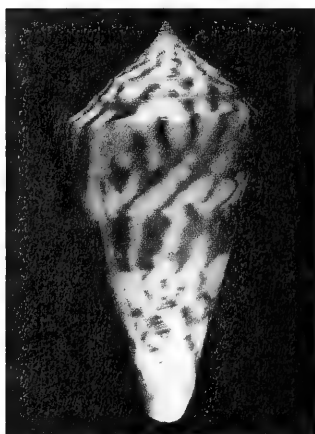
Conus attenuatus
Reeve, 1844. 25 mm. 30',
Cap Salomon, Martinique.



Conus boui da Motta, 1988.
37 mm. 70',
Cap Salomon, Martinique.



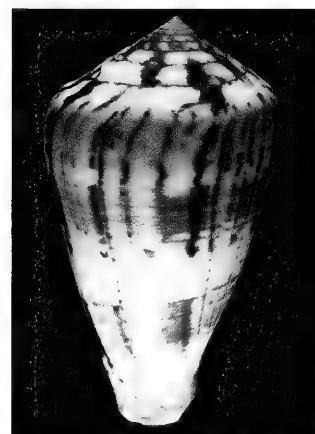
Conus centurio Born, 1778.
55 mm. 200',
Goajira Peninsula, Colombia.



Conus centurio var. *antillensis*
Sander, 1982. 64 mm. 500',
Barbados. (ex: Finn Sander
collection) PARATYPE



Conus clerii Reeve, 1843.
45 mm. 35 fms.,
Espirito Santo, Brazil.



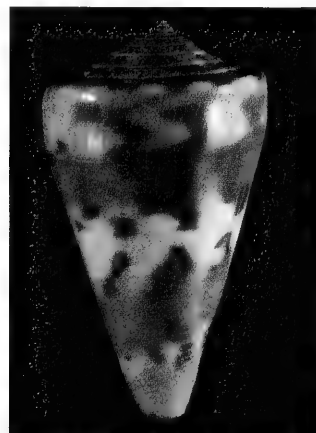
Conus ermineus Born, 1778.
71 mm. 20', St. Vincent.



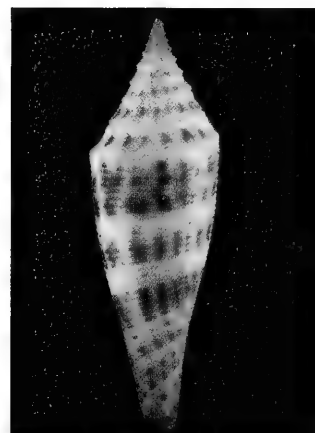
Conus finkli Petuch, 1987.
37 mm. 200',
off Cabo la Vela, Colombia.



Conus flammeacolor
Petuch, 1992. 26 mm. 180',
Caribbean coast of Panama.



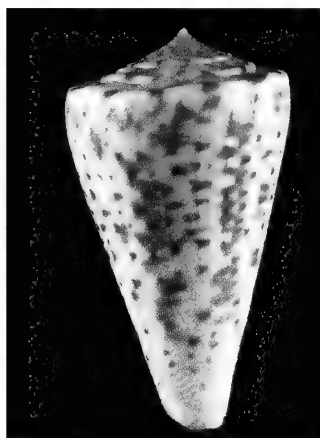
Conus goajira Petuch, 1992.
42 mm. 175',
Cabo la Vela, Colombia.
PARATYPE



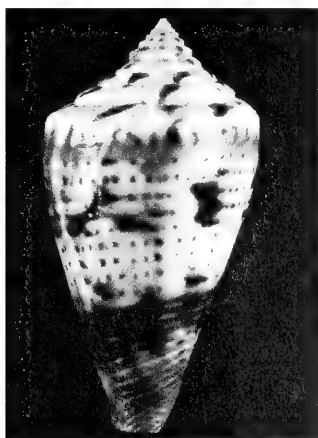
Conus kremerorum Petuch,
1988. 30 mm. 70 m. off
St. James, Barbados.
(ex: Finn Sander collection)

The intent of these centerfolds is not necessarily to distinguish among valid and invalid species, but to provide illustrations of taxa not popularly available, for the information of the collector.

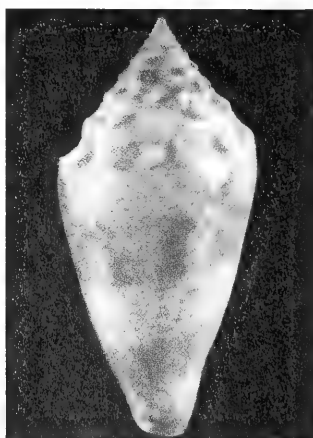
A special thanks to Dr. Fred Thompson and Kurt Auffenberg at the Florida Museum of Natural History in Gainesville, for allowing us to photograph some of the "special" shells in the museum collection.



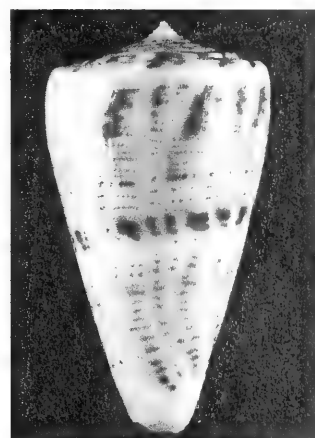
Conus lemniscatus
Reeve, 1849. 43 mm. 35 fms.,
Espirito, Santo, Brazil.
(Syn: *clenchi* Martins, 1943)



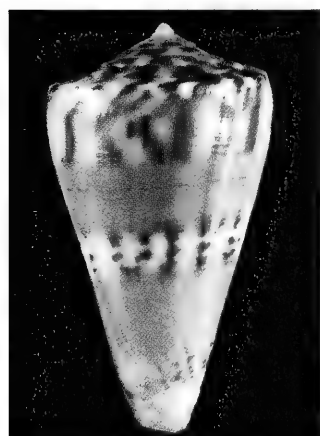
Conus c.f. *mayaguensis*
Usticke, 1968. 28 mm. 10',
Samana, Dominican Republic.



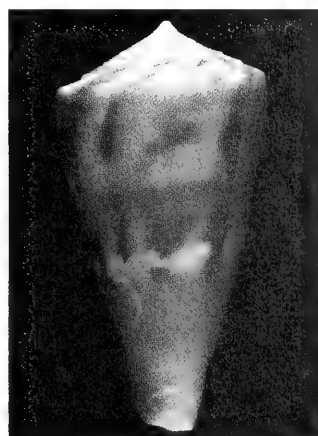
Conus mindanus agassizii
(Dall, 1886). 34 mm. 225 m.,
St. James, Barbados.
(ex: Finn Sander collection)



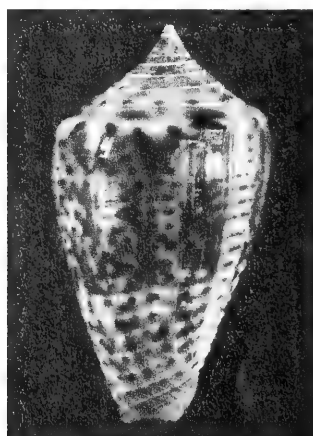
Conus norai da Motta &
Raybaudi, 1992. 37 mm. 70',
Cap Salomon, Martinique.



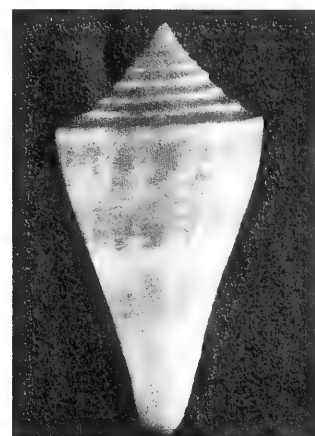
Conus norai da Motta &
Raybaudi, 1992. 43 mm. 200',
Goajira Peninsula, Colombia.



Conus poulosi Petuch, 1992.
50 mm. 175', off
Cabo la Vela, Colombia.



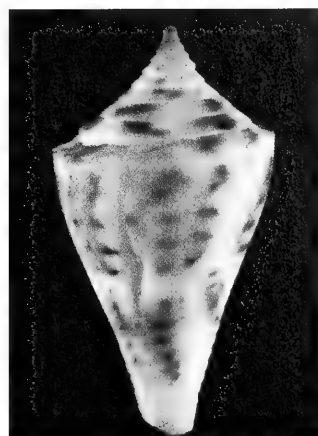
Conus puncticulatus
Hwass, 1792. 25 mm. 10',
Cap Salomon, Martinique.



Conus stimpsoni Dall, 1902.
40 mm. 200',
S. of Key West, FL.



Conus sunderlandi Petuch,
1987. 33 mm. 60', off Utila,
Bay Islands, Honduras.
PARATYPE



Conus tristensis Petuch, 1987.
28 mm. 200',
Goajira Peninsula, Colombia.



Conus verrucosus Hwass,
1792. 27 mm., 200',
off Cabo la Vela, Colombia.



Conus villepini Fischer &
Bernardi, 1857. 68 mm.
90 fms., off Dry Tortugas.

PUBLICATIONS ON FOSSIL MOLLUSKS:



Tulane Studies in Geology and Paleontology and More

Back in the early 60's Tulane University in New Orleans had a very small paleontological and geological library that needed building. One good way to do this was to exchange publications with other institutions — only problem was, Tulane Geology Department had no publication to exchange. So they started one. On August 31, 1962, Volume 1, Number 1 of **Tulane Studies in Geology** was issued, at a cover price of \$2.75. Under the editorship of Hubert C. Skinner, assisted from the beginning by Emily H. Vokes, the thing grew. Viewing it as publicity for the Tulane Graduate School in Geology, the graduate school for a time helped support **Tulane Studies**, but now it is self-supporting. Today, **Tulane Studies** is exchanged with over 200 institutions around the world, with more foreign exchanges than U.S. ones.

For at least the past 20 years, Emily Vokes been associate editor and then editor of the journal. The aim is to produce a volume a year, when possible. **Tulane Studies** is an invaluable tool for anyone interested in the fossil shells of the southeast U.S., especially the muricids and the bivalves.

Probably the best-known of the articles in **Tulane Studies**, to students of both fossil and recent mollusks, is Emily Vokes' own series on "Cenozoic Muricidae of the Western Atlantic Region." This series now has ten parts with the appearance of Volume 27 at the end of May 1994; Part I appeared in Vol. 1, No. 2 in 1963. The many other articles by Emily Vokes are too numerous to list here. Through the years, Harold Vokes has contributed just as many papers on fossil bivalves. Together they authored the very interesting Special Paper on the History of Science, "The Making of a Geologist—In the Footsteps of Darwin in South America" (1982). Both have contributed a number of article on the Chipola Formation of northwest Florida, in the form of "Notes on the Chipola Formation." Some other contributors on fossil and recent mollusks are Richard Petit, Dr. David Nicol, Robert Bullock, Barry Roth, Jean Cate, and Shirley and Robert Hoerle.

All numbers are still available and Emily Vokes suggests that anyone interested write for a complete price list. Prices range from \$1.00 for Vol. 2, No.1 to \$20.00 for the more recent full volumes. The address is: **Tulane Studies in Geology and Paleontology**, Department of Geology, Tulane University of Louisiana, New Orleans, LA 70118 USA.

In March, when we were listing some fossil references from the Carolinas, it seems we missed mention of two very important publications. The first, as Steve Rosenthal reminds us, is **Mollusca from the Miocene and Lower Pliocene of Virginia and North Carolina. Part 1: Pelecypoda** (178 pp., 23 b/w plates) (1943) **Part 2: Scaphopoda & Gastropoda** (131 pp., 15 b/w plates) (1948) U.S. Geological Survey Professional Paper 199A and 199B by Julia Gardner. These are long out-of-print but profusely illustrated. Steve may have a set for sale if anyone is interested. (2140 Merokee Dr., Merrick, NY 11566)

CARIBBEAN CONIDAE

REFERENCES:

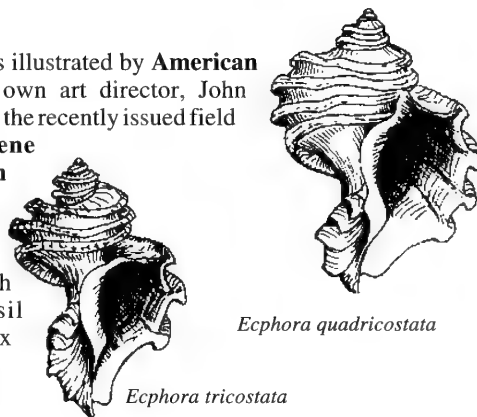
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 Lozet, J.B. & C. Petron. 1977. *Shells of the Caribbean*.
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The second is illustrated by **American Conchologist's** own art director, John Timmerman. It is the recently issued field guide to **Neogene Fossils of North Carolina**, with

text by Richard Chandler, published by the North Carolina Fossil Club, P.O. Box 2777, Durham, NC 27705. Cost is about \$4.00.

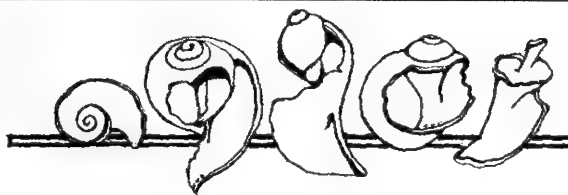
The book deals with all types of fossils, including vertebrates, but the final section contains mollusks, and John's drawings are a treat, including one of his "Impossible drawings" on the cover.

And we note mention in a South Alabama Shell Club **Johnstonian**, of a publication for the fossils of Alabama: **Stratigraphic Distribution of Paleocene and Eocene Fossils in the Eastern Gulf Coast Region, Monograph 13, Vols. 1 & 2**. Write: Geological Survey of Alabama, P.O. Box "O," Tuscaloosa, AL 35486. ATTN: Publication and Sales Office, Geological Survey of Alabama Map Fund. The cost is \$13.50 postpaid.



HEADS UP, MUREX COLLECTORS: ROLAND HOUART will be issuing a new book soon on the species named since Radwin and D'Attilio's 1971 *Murex Shells of the World*. It'll be published by Hemmen in Wiesbaden, Germany.

Flotsam and Jetsam



TUCKER ABBOTT makes good on Wall Street. If you haven't seen the **Wall Street Journal** profile of Dr. R. Tucker Abbott, you're in the minority. Congratulations, Tucker! We knew all along that our own "Mr Seashell" is a headline personality as well as a magnificent resource to all the shell collecting world, but it's nice to know that the rest of the world is aware of his very special status as well. It's also nice to know that it has given our hobby too a well-deserved shot of publicity. The March 18 interview, written by Eric Morgenthaler, begins: "For at least a decade, this newspaper has not used the word *malacology*. Today we make up for lost time." That's because Tucker, ever loyal to the mollusks he loves, continually deflects the limelight from himself to shells. Hunt down the article at your library and read it. You'll love it!

COA MEMBERS MARY AND AL BRIDELL have been profiled in the April **Southwest Florida Fossil Club Newsletter**. Congratulations to you both. And we bet there's a lot most of us don't know about these two familiar faces at every convention! Your editor was unaware that Al went to the same school as her son, Washington University in St. Louis, or that Mary was such an intrepid traveler.

AFTER A LONG HIATUS, Volume 2, No. 12 of the Journal of the Conchologists of Brazil, **Siratus** has arrived. Along with articles on Fissurellidae of Brazil, marine mollusks of Trindade Island, Byne's Disease, ship worms, range extensions and the description of a new species of cockle, *Trachycardium manueli* Prado, we read some news that saddens us. The editor, José Coltro, Jr. writes that **Siratus** is no longer a periodical, but has become an occasional publication of the "Conquiliologistas do Brasil" due in part to funding problems, but also to the loss of one of their most dedicated and talented members and contributors, Renato Moscatelli, who passed away in July 1992. They hope, by this cut-back in their schedule, to maintain their high standards when they do publish.

SPEAKING OF JOURNALS, **Xenophora**, the Bulletin of the French Association of Conchology, so ably edited by Gerard Paul and Franck Frydman, always has outstanding covers. But the latest issue, No. 65 (Jan-Feb-Mar 1994) has surpassed anything so far. It's a stunning color photo of that rare and most elegant of harps, *Harpa costata*, autotomizing (that's self-amputating!) the posterior portion of its foot and crawling away. Harps and Morums mutilate themselves in this fashion to escape predators; later they regenerate the amputated portion of their anatomy.

NEW MEMBERS come to COA in a number of ways. The most obvious is through local shell clubs and their grapevines, and through our hard-working COA club reps. But another way is through local libraries. We are listed in a number of organizational directories. The most recent is the 1994 (and first) **Specialized Directory of Collectibles, Clubs, Societies & Associations**. According to its publisher, Rodney Battles, of Hurst, Texas, "collectors, dealers, and 'plain folks' who are just curious, will be pleasantly surprised to know that some of the organizations contained in the directory exist. There are clubs for everything from Avon products

to Zeppelin stamp collectors." That doesn't surprise us, now, does it?

DR. ED PETUCH's new **Atlas of Florida Fossil Shells** Vol. 1 Pliocene and Pleistocene Marine Gastropods, is expected any day now. The three hundred pages of this hardcover 8 1/2" x 11" book are filled with as many new species, 100 plates, and over 1,100 illustrated species.

THE SOUTHWEST FLORIDA CONCHOLOGIST SOCIETY has just presented the Bailey-Matthews Shell Museum on Sanibel a check for \$1,000. Thank you from all of us, SWFCS!

THE DEATH OF ELEANOR MILLER was a hard blow to the Treasure Coast Shell Club, as is the death of anyone in a club who's not just active but a very good friend. Treasure Coast has chosen three very fine ways of remembering Eleanor. They have purchased a Remembrance Garden Stone at the Sanibel Bailey-Matthews Shell Museum. They have renamed a shell show trophy for the Best Florida/Caribbean Exhibit the "Eleanor F. Miller Trophy," and redesigned it to feature one of Eleanor's favorite finds, *Mitra florida*. And they have designated the March issue of their **Treasure Coast Shell News** a memorial issue to Eleanor, with individual members' special memories of their departed friend. What fitting monuments to a really special woman! And what good friends you've been, Treasure Coast!

FOR MANY YEARS, Oregon Society of Conchologists has claimed the only newsletter with 4-color illustrations (Editor Maxine Hale carefully colors each copy of her production, which features a cute little snail and his adventures through the seasons. Does he/she have a name, Maxine?) Now, another newsletter has joined the ranks — the **Johnstonian**, of the South Alabama Shell Club, so ably edited by club founder, Shirley Dennis. SOMEONE is adding accenting touches of color to the artistic embellishments of Shirley's spouse, the very talented John Dennis (see **American Conchologist** cover, June, 1993).

ANOTHER SHELL BAN?!!! In the works now is a ban on live shelling over most of the southwest coast of Florida, from Sanibel south to the Keys. We wish the conservationists who try to save our world would learn more about it first. Nothing short of a major climate change or an oil spill could damage the populations of *Battillaria minima* on many of those beaches and mudflats. And at the same time, no shell ban will ever save the angel wings killed by pollution. The offspring from just a few scallops could repopulate an entire bay in a year or two, but they can't breed if they're silted over. Education had better become our first priority. The damage done by collectors is slight compared to the devastating effects of ignorance.

A RULING FROM THE ICZN: The family name Rissoidae Gray, 1847 has been given precedence over Truncatellidae Gray, 1840. Did the good members of the commission think the name should better fit the size?



A RAVE REVIEW

THE CLASSIC SHELLS OF THE WORLD by T.C. Lan. 1993. privately published by the author, P.O. Box 34-35, Taipei, TAIWAN. 224 pp., 196 color plates. \$195, including registered air-surface mail.

This magnificent volume is without question one of the most beautiful books ever published on the mollusk shell. The author, for many years a leading figure in malacology in Taiwan, has described several new species and in 1979 published the very fine **Rare Shells of Taiwan in Color**. With his new book he has shared with us his love of the spectacular beauty of nature as exhibited in the shells created by the animals of the phylum Mollusca.

In the nearly 200 color plates, the author has given us a visual delight — unrivalled beauty of color and form — with his selection of 225 mollusk species, primarily gastropods and bivalves. Often several examples of a species have been presented, giving us a glimpse of variation within a species. Collectors' favorites — Cypraeidae, Muricidae, Volutidae, Conidae, Pectinidae, and Spondylidae — are well represented; the other half of the plates feature exceptionally attractive specimens of common to rare species. Among the highlights are the exquisite *Rotaovula hirohitoi* Cate & Azuma, 1973; the unbelievably elegant *Babelomurex (Tarantellaxis) kuroharai* (Habe, 1970); several color forms of *Spondylus linguaefelis* Sowerby, 1847; *Phyllonotus eversoni* (D'Attilio, Myers & Shasky, 1987); *Kapala*

kengrahami Ponder, 1982; *Columbarium brayi* Clench, 1959; *Trigonostoma milleri* Burch, 1949 — I could go on and on and on!

The specimens are frequently pictured with a carefully selected natural object — to this reviewer a most effective method of focusing the attention of the viewer on the attributes of the chosen specimens. The quality of the photographs is without equal — each plate stunning and worthy of framing as a gift for the most fastidious collector. The plates are followed by ten pages of explanation, in which the name, size, locality and, quite often, interesting facts are given for each species. This reviewer noticed two misspellings (both in common misuse) — *Conus incostans* should be *inconstans* and *Spondylus linguaefelis* should be *linguaefelis*.

Only 1000 copies were printed — I have a letter stating that the printing plates were destroyed. This is a book that, despite the relatively high cost, any shell collector would enjoy, and not merely as a "coffee table book." If you want to give yourself a present that you will always be proud to own, this is that special item. Do not procrastinate — get your copy before this limited, numbered edition is out of print. You will be glad you invested in such a remarkably excellent volume.

—Walter Sage

AND TWO BAD REVIEWS

SEASHELLS OF NORTH AMERICA by R. Tucker Abbot(t). Edited by Theodore Rowland-Entwhistle. *Science Nature Guides, Dragon's World, Limpsfield and London*. 81pp., illus. Hardback. ISBN 1-85028-264-1. American publisher: Thunderbay Publ. 5880 Oberlin Dr. Suite 400, San Diego, CA 92121. \$12.95

It is not often that an author of a book takes it upon himself to review his own book, but it is time to clue my readers into the dangers and vagaries of allowing a malacologically ignorant and incompetent editor to create and shape the final version of an author's book.

It all started when this English publisher, known for its excellent science-fiction books, suggested that a children's version of my **Seashells of the Northern Hemisphere** be prepared by their more competent specialist in writing junior books. I agreed to this strange arrangement, despite the fact that I had already written three successful children's books, because they would present me as the author and make a small advance against royalty fees, and because I was promised an opportunity to see all proofs.

While the selection by the editor of a sprinkling of both Atlantic and Pacific illustrations seems reasonably helpful to any American youngster, unfortunately wrong shell photographs were placed under the accounts of a few species, including the Cayenne Keyhole Limpet on page 27 (behold the Barbados Keyhole Limpet!).

Despite my protestations in the formative stages of the book, the editor decided to exclude all scientific names. Apparently kids can absorb such dinosaur names as *Tyrannosaurus*, but not such mollusk names as *Turbo* and *Ficus*. In order to seem knowledgeable about scientific trivia, the editor added the useless information that each species was "First discovered by so-and-so on such-and-such a year." Thus the Common Fig Shell is stated to have

been "first discovered by Roeding [sic] in 1798." He really should have hearkened to my request that all these species were "first described by." The Eroded Periwinkle from the Pacific Coast, originally described by Philippi in 1847, is said to be "first discovered by Rosewater in 1978." Most malacologists know that Rosewater in 1978 was only replacing Philippi's preoccupied name, and can hardly be credited with "first discovering" it.

I do forgive the editor for misspelling my name on the title page. My ancestors in the time of Cromwell did spell "Abbot" with one "t." We "yanks" added another "t" in 1824.

The illustrations and instructions for the children's activities, euphony called easy-to-do science projects, are right out of the Edwardian, if not the Victorian, period and they must seem baffling to American kids who will want to know how to find PVA glue. I hope the young readers won't take the advice: "to make the shells shiny, you can paint a coat of varnish over them," or "attach shells to a ring of straw with wire and pins." But then again, mother will come to the rescue.

Please do not confuse the title of this book, **Seashells of North America**, with my Golden Press Field Guide with the identical name published in 1986. If you are a bibliophilic collector of bizarre oddities, I highly recommend this new Science Nature Guide.

Mollusks are known to crawl back under rocks to hide from the outer world. So must some authors.

—R. Tucker Abbott

AND TWO BAD REVIEWS, cont'd

SEASHELLS, *Science Close-Up Series*, by Gina Ingoglia, with illustrations by James Spence and Earl Parker. A Golden Book, N.Y., Western Publ. Co., Racine, WI. 24 unnumbered pages, illus. in color.

Until recently, I have always taken pride in being the author of three science books on mollusks published by the Western Publishing Company. Former editors, like Herbert S. Zim, demanded scientific accuracy and literary honesty. In fact, he insisted that authors be allowed to correct and up-date their works at not-infrequent new printings.

However, this recent shell book effort is probably the worst of its kind ever published in the English language or in America. The text is largely accurate and easily understood by children over the age of four, but the art and accompanying captions are shockingly inaccurate.

On page "5" an underwater marine scene depicts a starfish and an air-breathing French Edible Escargot snail crawling through ocean water. To add insult to this impossible scenario is the identifying caption, "arctic saxicave," which is the name of a small, white, deepsea calm from arctic waters.

On page "8" a painting shows, and the author states, that "scallop eyes have bright blue eyes all around the inside edge of their shells." However, scallop eyes are set in the edge of the soft mantle of the living animal, and not in or on the hard shell itself. This ignorance is confirmed by the weird painting of a live Calico Scallop on page "3" in which no eyes are shown in the mantle edge.

Several other label switches occur, such as between the "rose murex shell" (if the painting really is that genus) and the "apple murex shell" on page "19." But on page "21" calling the large Pink or Queen Conch a "Florida Fighting Conch" is something that the average Florida school child will recognize as being false.

I could bore the reader with many other examples of atrocious errors and misleading statements, but I leave room to report that I wrote Golden Press about these errors many months ago and received no answer. I subsequently learned that one of their marketing experts hustled over to the American Museum of Natural History, in New York, to confirm from one of their mollusk experts that I was, indeed, correct with my appraisal. The expert, with fewer qualifications than myself, was written a check for \$200.00 for his half-hour of advice.

But these publishing travesties, although somewhat bizarre, are nothing compared to the packaging of this "science close-up," **Seashells**. Mounted upon a stiff cardboard and under a clear plastic compartment is both the booklet, and above it, five actual specimens of seashells glued above labels bearing a mixture of erroneous scientific and invalid popular names.

How many copies of this creation were published was not revealed to me, but I cannot believe that, say, 5,000 copies had the same species supplied by a wholesale shell dealer for each copy. A lady editor, also evidently a marketing expert, assured me that the late George Fichter, a responsible science writer for Golden Press, had checked the accuracy of this book. I can assure the reader that my friend, George, would have known that land snails don't travel under the ocean, except in Dr. Doolittle books, and that the common Hard-shell Clam or Quahog is not a tropical "bitter-sweet clam."

As Andy Rooney, the literary columnist, once ruefully observed, "Too many bright young men and women are turning their talents to packaging and selling things... They don't care what they are selling, they just know how to do it." To paraphrase this oracle,

"There is usually trouble between scientific writers and publication designers. Most designers are creative artists who tend to ignore scientific facts. Most scientists, on the other hand, don't usually care much what a popular book looks like as long as it educates and stays honest."

In the life of a book salesperson, these minor errors are correctable in the next printing. In the life of a teacher of our American children it is a fraud. In the life of a science writer and proud author of good Golden Press books, it is an affront. In the life of the President of Western Publishing Company perhaps it will be an inspiration to clean out his stables. The bibliophobic stench is becoming noticeable among teachers and conservationists in America.

— R. Tucker Abbott, Ph.D.

THE LIFE AND DEATH OF A MUREX HIRASEI

by Brian C. K. Dy

From a batch of several live-taken murex species, this *Murex hirasei* is curiously the odd man out. With a body whorl that is encrusted with corals, worm shells and other residues, it appears to be a drab, lifeless specimen. The sole sign of life in it is a newly generated siphonal canal. It's fresh as a daisy, and protrudes a few millimeters off axis from the

original base where it was previously broken, practically sprouting from the edge of the aperture. The result of this abnormal process is that the whole specimen appears tilted and grotesque, yet it's neither a freak nor a variation of the species.

Although shell repair is a common occurrence among mollusks, and among *Murex hirasei*, this particular repair is cast in a different mould. It's life and death embodied in a single specimen. How could the mollusk survive until the time of its capture? How did the state of its shell affect its lifestyle underwater? How could such a moribund mollusk in its seemingly aged and senile shell bounce back and produce a fresh, pristine replacement for its lost siphonal canal? Indeed a quaint little specimen shrouded in mystery.

P.O. Box 1800, Manila, Philippines

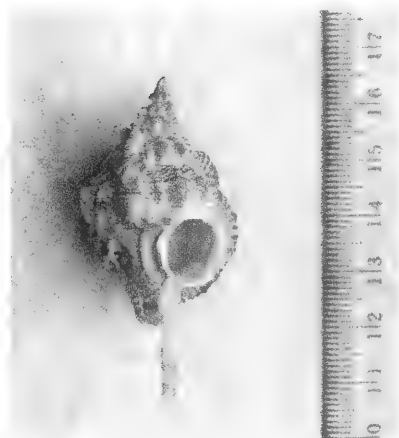


Photo by Reynaldo Loo

TOOLS FOR THE COLLECTOR: CONCHOLOGICAL DIRECTORIES

A non-sheller recently expressed amazement that there could BE enough information to keep a whole quarterly magazine on shells in business. The abyssal depth of this malacological ignorance astounded your editor to such a degree that she was at a loss and, for once, silenced! How to answer? All those aspects of the subject! All those books on the malacological shelves! Volumes we keep handy for reference, necessary to our hobbies. New ones being published all the time. Books on prices, books on sizes, books on anatomy, books on families and fossils, freshwater and land. Dictionaries, both conchological and Latin. Atlases and tide charts. Even a **Directory of Clubs, Books, Periodicals and Dealers!** Enough information indeed!

An indispensable book in of many of our libraries is Dr. Abbott's excellent **Register of American Malacologists** (2nd edition, 1986-87); though in need of an update again, this Who's Who in Malacology is irreplaceable, especially if one needs to know the education, interests or office address of professional malacologists and many serious amateurs. Listed alphabetically, the entries include full name, date and place of birth, occupation, education, professional career, malacological memberships and other professional memberships, writings and editorships, molluscan research interests, private collection details, collecting trips, civic and professional honors, directory listings, spouse's full name, occupation and interests, home and office address and phone number. There's also a short "History of American Shell Clubs." It's an amazing packet of information condensed and neatly organized between its two familiar maroon covers.

Dr. Abbott thoughtfully includes in the 2nd edition a separate section of "Historical Biographies" of malacologists having died between 1972 and 1987. What, you ask, about the ones who died prior to 1987? They're included in the first edition (1973-74) and its supplement (1975), and they make fascinating reading if you've ever wondered about those shell authors: C.B. Adams' initials stand for Charles Baker, and he died of yellow fever on a collecting trip to the Virgin Islands at age 39. Couthouy [pronounced KOOTH-WEE] was a sea captain who died in battle in the Civil War in Louisiana. And did you know that Philip Pearsall Carpenter, who did so much work on the shells of the West Coast, was an English-born Presbyterian minister who was a volunteer conchologist at the British Museum, then a working conchologist at the Smithsonian, and that he was author of a book called **American Conchologist**?

Among the features of the 1st edition are a geographical index of the biographees, a list of deceased malacologists about whom information is sought, and an occupational classification of biographees: as diverse as stock brokers, sculptors, steel workers and florists. Sadly, this 1st edition is no longer in print.

The only real weakness of the **Register** — besides the fact that such a reference, like encyclopedias, goes out of date immediately on printing — is that it is not truly representative. In spite of the fact that 2,200 people are included in the 2nd edition, many amateurs are omitted or mentioned only briefly. This lack is not the fault of Dr. Abbott. He has listings, no matter how brief, for every member of AMU, WSM, and COA at the time of compiling. But there are



CLIP OR PHOTOCOPY

TOM RICE'S 1995 ENTRY FORM

DIRECTORY OF CONCHOLOGISTS/MALACOLOGISTS, 2ND EDITION

Please print or type your information and return to TOM RICE, Editor, Box 219, Port Gamble, WA 98364 U.S.A.

NAME: _____

ADDRESS: _____

TELEPHONE NUMBER (optional): _____ FAX#: _____ E MAIL: _____

CHECK YOUR INTERESTS: ☐ all mollusks; ☐ marine; ☐ terrestrial; ☐ freshwater; ☐ fossils;
☐ specimen exchange; ☐ information exchange; ☐ purchase; ☐ sell; ☐ photography;
☐ micro mollusks; ☐ shellcrafts; ☐ shell art; ☐ color forms; ☐ freaks; ☐ habitat studies;
☐ anatomical studies; ☐ mollusks on postage stamps; ☐ crustaceans;
☐ other invertebrates: _____

I AM ESPECIALLY INTERESTED IN THE FOLLOWING FAMILIES: ☐ Conidae; ☐ Cypraeidae; ☐ Muricidae;
☐ Volutidae; ☐ Pectinidae; ☐ Terebridae; ☐ Strombidae; ☐ Mitridae; ☐ Unionidae; ☐ Epitoniidae;
☐ Coralliophilidae; ☐ Pleurotomariidae; ☐ Nautilidae; ☐ Marginellidae; ☐ Trochidae; ☐ Turbinidae;
☐ Nassariidae; ☐ Fissurellidae; ☐ Patellidae; ☐ Tellinidae; ☐ Spondylidae; ☐ Tridacnidae;
☐ Polyplacophora (chitons) ☐ all Gastropoda; ☐ all Bivalvia; ☐ Opisthobranchs; ☐ Nudibranchs;
☐ all of the above.

OTHER FAMILIES: _____

COMMENTS OR ADDITIONAL INFORMATION:

(As a stamp collector, the Editor greatly appreciates your use of colorful stamps on mail!)

☐ Please notify me when this edition is published.

☐ Please send me a copy of the 2nd edition upon publication and bill me.

Send via: ☐ Surface Mail; ☐ Air Mail _____ (Sign please)

many new members of these organizations today. And for a full biographical entry, each biographee must complete an application for a listing (no charge). Few amateur shellers have taken the time or initiative to do so (your editor included), with the result that our portion is incomplete, and we have weakened the effectiveness of this fine and ambitious work. What a tool a new edition could be if we all cooperated it its compilation!

Last year, our old friend, Tom Rice, of Port Gamble, Washington, issued his **Directory of Conchologists/Malacologists**, the youngest of the "Tom Rice Handy Reference Series." It provides only name, address and phone number, along with a synopsis of shelling interests of each entry. But, whereas the **Register** was geographically limited to the Americas, Tom's new **Directory** is worldwide in scope. Want to know who's shelling in Estonia? Or Syria? Or Tajikistan? Or North Dakota? Check Tom's **Directory**.

But according to the **Directory** there's only one shell collector each in North Dakota, Syria, and Tajikistan, and two in Estonia, a husband and wife. No, you're right — that can't be correct. Tom's product is flawed by the same mechanism that hurt the **Register**: both are dependent on our participation. And it was sadly incomplete. In the introduction to the **Directory**, Tom apologized for the relatively high price of the **Directory** (\$10.95), explaining that he

had sent out over 5,000 entry forms, at a cost of \$0.25 to \$0.95 per piece, an expensive undertaking. And at that he probably didn't scratch the surface of collectors and malacologists worldwide. What return he got, we don't know. But he wound up with only about 1,500 entries for all his efforts. (No, your editor didn't mail her entry back either.)

This shortfall wasn't Tom's fault. He tried hard. And he delivered a promised product that was at least as good as our response. Now he's at work on the 1995 update (He's promised a new edition every two years). And he's requesting our entries again. This time, let's support his efforts in our behalf. Let's fill out those darned questionnaires and enable him to produce a much more useful product. And to help keep the costs down, copy the application form below and mail it back to him. Better yet, push for others to do the same. Start a campaign in your shell club to have complete participation of interested shellers. Exchange with traders overseas or correspond with or visit shelling friends in other countries? Send them a copy and ask them to complete it, and duplicate it and spread it around to their contacts. We'll all benefit. And maybe we'll encourage Dr. Abbott to update his **Register** too. (Your editor's form is already in the mail.)

1994 COA AUCTION WEDNESDAY, JULY 20, 1994: A DATE TO REMEMBER

The history of **TEXAS** is full of great events and important dates. Since history is a record of the past, it can also be utilized to predict the future. One important date in history, at least **COA history**, that you do not want to miss will be Wednesday, July 20, 1994. Looking into my crystal ball, I can see a great event happening on that date. Great masses will assemble to witness this spectacle and it will be recorded for generations to come. This great event will be the **1994 COA Annual Auction**, to be held at the Bayfront Marriott Hotel in beautiful Corpus Christi.

TEXANS take great pride in showing their hospitality, and this year's auction will be no exception. We are putting together an outstanding show for those COA members who plan to attend the COA annual convention this July. We hope this year's auction will have something of interest to everyone. In addition to the oral auction scheduled for Wednesday afternoon, Fran Perry of the Coastal Bend Shell Club has been hard at work assembling a series of silent auctions which will begin on Monday evening. Between the oral auction and the silent auctions, all bases will be covered. All you have to do is show up, enjoy the afternoon, and bring your checkbook.

To help you get into the bidding spirit, listed below are a few of the items to be included in the auction of Wednesday afternoon. The spectacular shells include:

Altivasum flindersi Verco, 1914
Attiliosa bozzettii Houart, 1991 (set of 2)
Chicoreus spectrum (Reeve, 1846)
Conus assortment (set of 21) from Guadalcanal
Conus bossettii Lauer, 1991 (set of 2)
Conus bullatus Linné, 1758 (set of 2)
Conus crocatus Lamarck, 1810 (set of 2)
Conus gloriamaris Chemnitz, 1777 (2)
Conus milneedwardsi Jousseaume, 1894 (HUGE!)
Cypraea aurantium Gmelin, 1791 (2)
Mericella bozzettii Petit & Harasewych, 1993 (set of 2)
Metula bozzettii Parth, 1990 (set of 2)
Morum dennisoni Reeve, 1842

Pleurotomaria atlantica (Rios & Matthews, 1968)
Pleurotomaria hirasei Pilsbry, 1903
Spondylus americanus Hermann, 1781 (3)
Spondylus princeps Broderip, 1833 (large color set of 5)
Voluta molleri (Iredale, 1936 (Banded form)
Volutaconus grossi Iredale, 1927 (Dwarf form)

In addition to the shells listed above, other items of interest include:

A Guide to Worldwide Cowries Lorenz & Hubert (1993)
 Five drawer mini storage unit
 Framed, matted set of 4 "works of art" by Emily Vokes (3)
 Glass top display case
 Group of cones from the study material of Bob da Motta
 Stained glass panel with nautilus
 Other books, uncommon-to-rare shells, fossils, and land snails

AND LOTS LOTS MORE!!!!

To all COA members and dealers who have not yet made donations, please do so as soon as possible. We still need your help! Get involved and help make this year's auction the best in COA History! Please send your donations to:

Dave and Lucille Green
 12307 Laneview Drive
 Houston, TX 77070 USA

We look forward to seeing all our COA members in Corpus Christi in July. **WELCOME TO THE LONE STAR STATE!!!!**

We might just as well sell all our assets and bring cash. The Greens, chairmen of the COA Auction this year, come from a club (Houston) that just netted \$3,837 at their LOCAL auction! They do things BIG in Texas! — Ed.



© 1991 Mathilde Duffy

OUR COA CLUBS — A CLOSER LOOK

by Nancy Gilfillan

Coastal Bend Shell Club

As is so often the case, several people who just wanted to learn more about shells formed a group on June 16, 1958. Today this group is called the Coastal Bend Shell Club, so named because of its location on the bend of the eastern Texas coast.

The club meets the fourth Tuesday of each month from September to May (except December, their Christmas party) at 7:30 p.m. in the Corpus Christi Museum of Natural Science and History, 1900 North Chaparral Street.

The club's membership is currently around 95 people. Many of them have a limited background regarding seashells; they join the club to learn more about shells and to go on the many and varied club field trips which range from local trips to one-to-three-day trips into Mexico, and usually one long (airfare) trip. This club's members are indeed fortunate to have access to at least one trip a month on which they can gain such a rich store of knowledge and experience to share with those members who are not fortunate enough to go. These members, however, range beyond the confines of their own meetings and give talks at schools or to other groups that express an interest.

The Coastal Bend Shell Club publishes a monthly newsletter during its meeting months which is called **The Mitchell**, so named for *Amaea mitchelli* (Dall, 1896), commonly called the Mitchell, or Mitchell's Wentletrap. This shell is indigenous to the western Gulf of Mexico coast and is associated with sea anemones. This relatively rare shell can be found between the months of October and March on St Jo's Island, Port Aransas, Texas.

Club pins featuring Mitchell's Wentletrap across the state of Texas are available through the club and may be purchased from Jean Roe, 105 Markham Place, Portland, Texas 78374. The cost is \$4.00; make your check payable to the Coastal Bend Shell Club. The club is now in the process of designing a tee-shirt which should be available at the COA convention.

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Membership is open to all and dues are \$10.00 (family), \$7.00 (individual), and \$5.00 (corresponding). Checks made out to the club should be sent to Don Poenish, Rt. 1, Box 212-C, Ingleside, Texas 78362.

A booklet entitled **An Easy Guide to Shells of the Corpus Christi Area** was a project of the club, published in the spring of 1991, and is designed for the layman, visitor or resident, who wishes to know more about the shells and other sea life found on their beaches. The cost is \$1.50; send your check, made out to the club, to Nunnie Clements, 3329 Manitou Street, Corpus Christi, Texas, 78411.

Most of the club's money is raised by selling shell packets to the gift shop of the museum where they meet. The members set up a meeting time and bring shells they have collected in the area. They then fill meat trays (purchased from or donated by one of the local grocery chain stores) with local shells, Saran Wrap and seal, then tag with the club's name (giving them free advertising). This is the larger packet. They also make a small packet using a large cockle shell and filling it with smaller shells, and a mini packet using a silver-dollar size cockle valve and filling it with very small shells. The demand for these is frequent. Other monies are raised through the sale of their club pins and shell booklet.

The club has been very conservatively building up their account in anticipation of having the COA convention. At this time the only money spent has been on buying a book a year for the club library. Once COA is over they may sponsor a scholarship or some such project.

The Coastal Bend Shell Club will be our hosts for this year's convention. From everything this writer has read in **The Mitchell** about the general area, it looks as though this COA should have plenty of field trips and sightseeing to tempt the most sophisticated. They are working hard, with the help of some other clubs, called "the Texas Connection," to put on a Texas welcome for us all. It should be memorable.

A SEASIDE MEDICAL CENTER

by Dean Weber

Dean Weber, of the North Carolina Shell Club, has written a little short story for your pleasure, one with a fresh "twist," as it were: how's your knowledge of scientific names?

It was as wild a scene as you could imagine, with the waiting room crammed with a mixture of regular and emergency patients. A bad fire had contributed to the overload, and coming through the front door as ambulatory patients were a Burned Nassa, a Singed Peristernia, a Black Olive, and a Burnt Spindle. They were directed to the registration desks.

A Measled Cowrie and a Measle-mouth Cantharus were isolated in a remote corner. Waiting for the psychiatrist were a Depressed Ancilla, a Troubled Miter, and an Unstable Limpet.

A Bent-nose Macoma and a Short-snouted Callista were apparently scheduled for cosmetic surgery. It was likely that a Humped Strombina was there for much the same purpose, although undoubtedly for a procedure much more complicated than a simple "nose job."

In very serious condition was a Gangrenous Cowrie being called to the emergency room, while a friend, a Saddened Turrid, was asked to remain outside.

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A Lumpy Morum and a Bleeding Latirus had been in a fight and were brought in by a police officer and assigned to separate sides of the large room.

Waiting for appointments with the allergist and skin specialist were a Blotchy Ancilla, a Blotchy Strombina, and a Pimpled Nassa. A Hooked Mussel had been brought in by a Weeping Murex for treatment for drug abuse.

There was to be a complex and unprecedented surgery by a medical team using experimental techniques. The patients involved were a Spineless Tudicula, a Spineless Dwarf Triton, and a Three-spined Cavoline.

Others in the waiting room included a Tumor Cockle awaiting scheduled surgery, an Arthritic Spider Conch, and a Sunburnt Cone.

Word came of a terrible accident in which the victims had been run over by a truck. The story seemed to be true, for a Flattened Tivela and a Flattened Stomatella were coming in on stretchers.

The parade never let up, for as I left the scene moments later to seek some solace in the fresh air outside, a Wounded Pitar Venus was being assisted through the doors.

How many of the sick and wounded can you identify with their scientific (Latin) names? We'll print a list of answers in September.

CONVENTION '94 UPDATE

The 22nd Annual COA Convention is fast approaching and members of the host group Coastal Bend Shell Club are gearing up for a **TEXAS SIZE CELEBRATION**. Dates are July 17-23 at the Marriott Bayfront Hotel in Corpus Christi, Texas.

Texas will be in the spotlight on Monday afternoon when Dr. Wes Tunnell and David Hicks of Texas A&M—CC Center for Coastal Studies deliver keynote talks on "Coral Reef Mollusks of the Southern Gulf of Mexico" and "Mussels Muscle in on the Texas Coast." Other programs during the week will include an exciting variety of topics: "I'm Walking, Yes, Indeed!" (locomotion of mollusks), "Caribbean Epitoniums," "Shelling in the Tuamotu Archipelago," "Please, Don't Shoot the Messenger" (name changes in the Pectinidae), "Shells Are Where You Find Them," and "Molluscan Trivia," to name only a few. Banquet speaker will be Dr. Henry Chaney of the Santa Barbara Museum, and his topic will be "Exploring Remote Outposts of the Tropical Eastern Pacific — Clarion, Clipperton and Cocos."

A special event of this year's convention will be a Wednesday morning coffee featuring the authors of many of the shell books we use so often, so bring along your books for autograph by the author. (Some may have copies for sale.) ALL authors registered for the convention are invited to participate in this fun event.

Wednesday afternoon brings our fantastic auction described elsewhere in this issue by Chairman Dave Green. It promises to be the biggest and best ever. Thursday brings the Dealers' Bourse

in the 10,000 square foot Corpus Christi Ballroom of the hotel, an event awaited all year long. The Bourse continues on Friday morning to be followed that evening by the banquet, where ladies of the Texas Connection have prepared some special surprises.

If you plan to drive to COA, you will find plenty of free parking in the Marriott's covered parking garage. To enhance your visit to Texas, we suggest you contact the Texas Department of Transportation for a free copy of "Texas," a guide with loads of information on attractions you won't want to miss. (Phone: 1-800-452-9292.)

Those who prefer to fly can still take advantage of the 5% discount on American Airlines arranged by Dallas member Barbara Rembisz at Advance Travel Network (1-800-388-1983). Barbara is available from 4:30-6:30 CDT Monday to Friday and on the first Saturday morning of the month from 10:30 to 12:30. In case of fare "wars," she will be in her office the Saturday following the announcement. The Marriott provides free airport shuttle service.

Remember, you are responsible for making your own reservations with the Marriott (1-800-874-4585). Rates are \$74 single or double, \$94 triple, and \$104 quad. Plus tax. For additional information contact:

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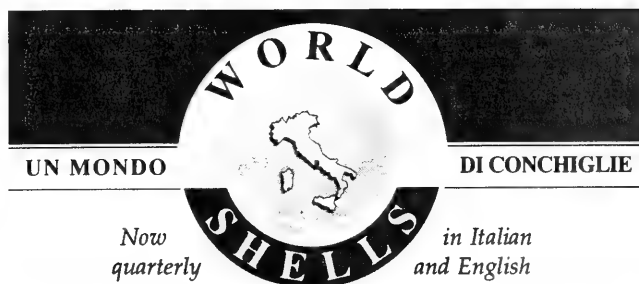
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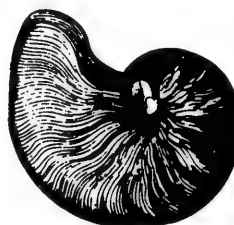


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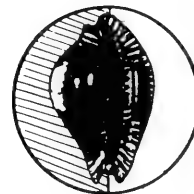
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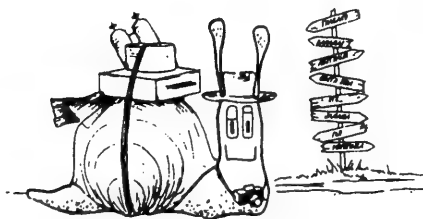
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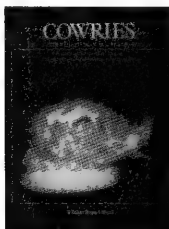
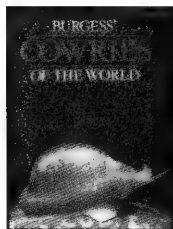
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VOL. 22, NO. 3

SEPTEMBER 1994



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COVER: AMERICAN CONCHOLOGIST goes country with Pauline Campanelli's "The Beachcomber's Basket." The 1993 oil-on-canvas painting measures 32" x 40". Pauline Eble Campanelli and her husband Dan (65 Route 627, Phillipsburg, NJ 08865) are both nationally recognized artists; their paintings are reproduced by The New York Graphic Society as fine art prints and distributed worldwide. Pauline and Dan have also written and illustrated several books on Nature Spirituality, published by Llewellyn Worldwide, St. Paul, MN. Pauline is a member of COA and her collections of shells, fossils, marine life and natural history were recently featured in **Country Collectibles Magazine**, Summer, 1994. A full color book of Pauline and Dan's paintings is currently being prepared by their publisher for release this fall.

PRESIDENT'S MESSAGE

For those of you unable to attend the 1994 Texas Connection COA Convention in Corpus Christi, you missed a good time. As the Texans kept telling us, "Things are bigger in Texas"; this seemed to hold true, especially when it came to raising money. This convention was the most successful for us financially, raising about \$20,000 in bid and silent auctions and "donation" drawings. It was also the best attended convention outside Florida. The Coastal Bend Shell Club and the other four Texas clubs that contributed their time and effort have done themselves proud. Next time there is a convention in Texas, you better not miss it. I would like to thank my friends in the Central Florida Shell Club for the lovely flowers, complete with three lighthouses, that they presented to me at the banquet. Their thoughtfulness won't be forgotten.

I want to thank the COA Directors who have consented to continue their hard work for another year for COA. I would also like to encourage anyone interested in serving on a committee to help any of the directors. If you are interested in being a director of the board in the future, please contact me. Positions open at various times, and it would be nice to have a pool of interested people.

LINDA

NOTICE TO PAY 1995 DUES:

By sending in the gold 1995 Dues Renewal Form inserted in this issue, you will continue to receive the *American Conchologist* in 1995. It will keep you informed on what is going on in the shell world and give information on the 1995 COA Convention in San Diego, CA.

DON'T MISS any 1995 issues of the *American Conchologist*. Please fill out the gold 1995 Dues Renewal Form and send to Walter E. Sage, Treasurer, P.O. Box 8105, Saddle Brook, NJ 07663-8105. Don't forget to add your +4 zip code.

The Coastal Bend Shell Club, with the help of five other Texas shell clubs, certainly rolled out the red carpet in July in Corpus Christi, Texas. It was a fun and informative week — we enjoyed it all!

Many thanks for your cooperation,
Bobbie Houchin, Membership Director

COA LOGO CONTEST

TITLE: A NEW LOOK FOR A NEW CENTURY

PURPOSE: Design a new logo for COA, incorporating official name: **Conchologists of America, Inc.** and the logo shell: **the COA Neptunea**. This logo will be used for letterheads and for the official masthead of the *American Conchologist* after January 1996.

To submit:

Use any form of **Black and White** presentation, pen and ink, pencil, etc. **No color.**

Must use Neptune shell (a copy will be sent on request).

Must use wording: Conchologists of America, Inc.

Mount on 8 1/2 X 11" cardstock or mat board.

Submit by **March 1, 1995** to:

Publications Director Betty Lipe

440 75th Avenue, St. Petersburg Beach, FL 33706

Top five entries (selected by the Board of Directors) will be printed in the June 1995 *American Conchologist*. They will be displayed at the San Diego Convention and will be voted on by the members present at the convention.

MALACOLOGICAL PHILOSOPHY

The two articles which follow address a subject of great interest to shell collectors. The concept of species is one of the most difficult for the amateur to grasp. The definition of a species seems to shift somewhat from molluscan family to family and from malacological worker to worker. We collectors worry about it inordinately, anxious over any shell that hasn't a name pinned firmly on it, any form that appears a bit different, any taxon that gets shuffled about by the systematists. Whatever group we collect, we want one or two of everything arrayed in our drawers; how can we know if we have achieved that elusive goal if we can't determine what the unit is?

Who more appropriate to address the matter than two very advanced collectors of the Family Conidae, certainly the most difficult popular family of all from this standpoint. Mr. Dieter Röckel and Mr. A.J. da Motta represent, in their approach to collecting, the two ends of the "species spectrum." An examination of their views may give us a clearer idea of the complexity of the matter and help us establish our own philosophies. Certainly they will give us something to think about.

The two articles were originally published in *Xenophora*, the *Bulletin of the French Association of Conchology* in Number 65, January, February, March 1994. We thank the authors of these two articles for their contributions to the subject and *Xenophora* for generous permission to republish their thoughts. In particular, George Markens, Gerard Paul, and our old friend Franck Frydman were instrumental in the project.

SPLITTERS AND LUMPERS

by Dieter Röckel

translated from the German by G. Markens

Shell collectors can be divided into many categories. Some only want large sizes; others look for tiny shells, or are attached to certain families or specimens from a particular locality. Some only want what they have found themselves while others prefer what they have bought. There are those who only accept gem quality and others who do not care, and so on. However, all these groups, each with very different collecting motivations, are separated by a deep but invisible trench — similar to that which divides the believer and the atheist, marxist and capitalist, fire and water, the righteous and the wicked. This trench irreconcilably divides the camps of the splitters and the lumpers.

Both camps believe they hold the truth. The splitter despises the lumper who, with a heavy hand and without proper judgement, throws everything into a heap. The lumper feels the same repulsion for the splitter who sees the trees but not the forest, who cannot see the essential against the accessory and shows an infantile pleasure in describing every modest variety as a new species. "Splitter" is an insult to the lumper, and any lumper is but a despicable target for a splitter.

While splitters' and the lumpers' camps exist for all the collectable shell families, the antagonism is particularly acute among Cone fans. Why? Because no other family shows as many variations or forms, or fosters as many complex problems of systematics. Nowhere else in the shell world are there more passionate discussions. Anyone looking for a fight should collect Cones!

In the eye of a lumper there is a simple explanation for the thinking of a splitter: every collector, whether an enthusiast of beer caps, matchboxes, old books, stamps or shells, wants to have as many pieces as possible in order to one day "be complete." Is one a real collector if satisfied with an incomplete collection? And doesn't one always want to advance by constantly reducing his list of missing items? If this is so, and it is, then a typical collector can never be a lumper but has to be a splitter, since he knows how to distinguish the acquisition of a new species from that of any old variety and, thus, has to raise high the flag of splitters!

The above is also true for dealers. Very attractive is a price list showing twenty different names which, for a lumper, would

(Continued on page 22)

Am Steinerz Kreuz 40, 61100 Darmstadt, Germany

WHAT IS A VALID SPECIES?

by A.J. "Bob" Da Motta

A shell collector, anxious to find a quick answer to this question, can be spared the required reading of volumes on taxonomy, biology, ecology and evolution by just looking up in a modern dictionary the meaning of the word "species." The one I consulted gives the definition as: a fundamental category of taxonomic classification, ranking after a genus, and consisting of groups of actively or potentially interbreeding natural populations, which are reproductively isolated from other groups. Simple as it is, this definition is as precise as it is concise and it has a two-fold significance.

In its taxonomic capacity as a category in the hierarchy of systematics, it qualifies a species (also defined as "taxon") to be valid if its erection conforms with fully current ICZN rules.

In its biological nature, its capability of reproducing its own kind is what makes it a valid species.

In other words, since there are no guidelines to determine species validity except for those prescribed by the ICZN to validate a species taxonomically as an available and valid taxon, it follows, therefore, that the status of a valid species must rely entirely on biological evidence. Again, this is confined to a single factor: whether it can be proven that, in terms of the species being a unit of a population, it will interbreed and propagate.

If that is all there is to it, then one might ask, "Why has there been so much interminable argument among conchologists? Obviously, simple as the definition of a species may seem, the capability of populations to reproduce is the vital factor, and one which has not been unequivocally resolved. Unlike the classification of animals in other phyla, whose behavior can be observed and confirmed, molluscs provide the least opportunity for field research. This is the main reason for the lack of biological data available, especially in the case of large families like the Conidae.

Starting from Linnaeus, species were first separated by their morphological features alone. Gradually, taxonomists began to compare anatomical features, ecological conditions, and feeding habits. Up to now, each malacologist still selects some specific characteristics he sees as most appropriate to distinguishing a particular species — the protoconch, the shell shape, the radula, the allopatricity of habitats or a combination of all such

(Continued on page 24)

13A Edificio Ka Vo, 30 Praca Lobo de Avile, Macau.

SOME THOUGHTS ABOUT EAST COAST SHELLING

by Steve Rosenthal

In May of 1991 we took a short family vacation to the Delmarva Peninsula. We had done no shelling, even though we had spent a few days at Chincoteague Island, Virginia, not a bad place to find shells. Traveling with an infant was something of an obstacle to mucking around on the tidal flats. The weather had been quite good, but on the way home to New York things abruptly changed, and we encountered miserable conditions (temperature in the 40's, cloudy, wind gusting over 40 MPH). We made a brief rest stop at Delaware Seashore State Park — there was a parking area right on the bay side of the barrier island on Rehoboth Bay. It being mid-May, there were many horseshoe crabs on the beach — start of the breeding season. Some of the dead ones had big *Crepidula fornicata* on their undersides, and I took a couple of 50mm specimens, and one dead *Tagelus plebeius* which was on the beach. After about 5 minutes it was just too cold to continue, so I got back in the car and we returned to New York.

About a week later it occurred to me that, with the above-mentioned episode, I had now collected shells in every state on the east coast, from Maine to Florida. This is really not a big deal, since most shell collectors I know can run off travelogues infinitely more awesome than my own. However, since I have at times referred to myself as a "specialized collector of shells from the east coast of the U.S." (even though I do collect just about anything from anywhere), at least now I could say I had been to all of it! And as a result, I mused about the states where I had my best (and worst) results — keep in mind that the following is extremely subjective commentary!

So what are my favorite states to collect in?

Florida is the first, of course — no need for further discussion, really. Its few pitfalls (densely populated coastal areas, especially in the winter; coastal overdevelopment and reduced populations of molluscs; and now, of course, violent crimes against tourists) will have to get a lot worse before I cross it off my list of destinations.

Second on my list is North Carolina. Now my subjective bias really comes into play, because I lived there for 10 years and got to know it fairly well. There is a nice diversity of habitats and species, warm air and water (you can swim in the ocean through October; one year we were collecting on Christmas Day — the temperature was in the 70's!), relatively easy coastal access, and relatively unspoiled, not too crowded beaches (see my article in *American Conchologist* 16:2). And, if you dive, you can get lots of Florida-Caribbean species on the wrecks offshore (as noted in *American Conchologist* 20:1). It was amazing how many "Florida" shells you could find in North Carolina, especially since they brought in Calico Scallops from Florida to North Carolina for processing, resulting in scaled-down versions of the famous Florida scallop piles showing up in North Carolina. We even found one place where piles of *Placopecten magellanicus* occurred regularly, reminding us that just north of Cape Hatteras we are out of the Carolinian Province, with a very different assemblage of mollusc species.

Next is Massachusetts. Like North Carolina there's the good diversity of habitats and species, fairly easy coastal access, and unspoiled beaches. Forget about warm air and water though, unless you are there from, say, May to September. And, if you are anywhere on Cape Cod during the summer season, be prepared for big crowds. Since Cape Cod is a major biogeographical barrier for many species, the way we used to

shell in Massachusetts was as follows: first we'd shell along the southeastern side of the state, visiting sites like Harbor Beach in Mattapoisett where we could beachcomb, or explore the sandy/muddy flats and shallows at low tide. There were lots of sand- and mud-loving species which were quite uncommon elsewhere in the northeast U.S., such as *Solemya velum*, *Tagelus divisus*, and *Nassarius vibex*. Then we'd drive north-east, foregoing Cape Cod for the Plymouth-Manomet area. There we'd find a vast rocky intertidal zone with a whole different assemblage of species such as *Nucella lapillus*, *Hiatella arctica*, and *Modiolus modiolus*, all of which live on, under, or between the rocks. Now that we were north of Cape Cod, we were in truly Boreal territory, and shells like *Solemya borealis* or *Aporrhais occidentalis* might even be found washed up on the beach. Furthermore, due to the influence of the Cape, the times of low tides differ from the north to the south, and we could even catch low tide at both places, with time to spare for plenty of collecting at each site.

Heading further north, I could extend the discussion about Boreal species and rocky coast collecting to Maine. I have only been there twice — those two short trips produced enough of a look and a few shells to make a return worth considering. While shoreline collecting is good for things like *Acmaea testudinalis* and *Nucella lapillus*, the real goodies are the shells like *Buccinum undatum* or *Neptunea decemcostata* that wind up in lobster traps. If you can find people fishing for lobster anywhere from Massachusetts northward, you stand a good chance of being able to cull some of the shells that also enter the traps in search of the bait. Just ask before you start poking in the traps! And where there are sandy or muddy coves and beaches, other boreal species can be found washed up.

After this, my excitement begins to wane. Since South Carolina is so close to North Carolina, we went there several times to shell, but we never found very much. We found areas with nice sand flats extending out miles at low tide, but where were the shells? Areas like Huntington Inlet State Park had nice marshes and beaches (and cute little alligators), but we never found many shells. The Sea Islands of Georgia had nice beaches, and on a few quick stops there we found some nice stuff. There were some big resort areas there (and in South Carolina too) where we felt a bit like intruders, and once we were so close to Florida it was hard to get motivated to stop where we were!

And back to the north, the stretch from Connecticut to Virginia gets less exciting as time goes by. Biogeographically speaking, it is again north of Cape Hatteras and south of Cape Cod. The Boreal species don't really make it south of Cape Cod (although some occur in deep water offshore down to Cape Hatteras). This is the so-called Virginian Subprovince, infamous for its relatively depauperate fauna. It is, of course, too cold for the tropical species, and too warm for the boreal ones. Richard Kirk gave a good background on this, with a paleontological perspective, in the *American Conchologist* (15:2). The knowledge that many of the species that we find here are the hardy survivors of climatic changes through the years, and widely tolerant of all kinds of environmental stresses goes only so far when we realize there really aren't all that many of them to look for.

I will put in a good word for Virginia and Maryland though — as Rich Kirk notes, you can find some really amazing fossil shells there, including cones, cowries and other

PUBLICATIONS ON FOSSIL MOLLUSKS:

The Paleontological Research Institution

by Warren D. Allmon

Scientists who do not work in systematics often do not understand the degree to which systematists depend on the literature. Modern molecular biology and particle physics publications, for example, are often out of date as soon as (or even before!) they are published. Not so in systematics, which may regularly make use of literature from the eighteenth and nineteenth centuries.

The career of Gilbert Dennison Harris (1864-1952) is illustrative of the centrality of the published literature to systematic malacology and paleontology. As a young Cornell faculty member in the 1890's, Harris set as his life's work the description of the fossil mollusks of the southeastern United States coastal plain and, from the very beginning, publication was an integral part of his vision of how he would achieve this objective. Frustrated by the difficulty of obtaining what were even then old and hard-to-find works, in 1893 he reprinted in one volume Timothy Abbott Conrad's seminal "Fossil Shells of the Tertiary Formations of North America," which had been published (as was the style of the time) in parts between 1832 and 1837. Frustrated at getting his own work into print in a timely manner, he founded **Bulletins of American Paleontology** in 1895. On the back cover of Volume 1, Number 1, he wrote:

These Bulletins will appear when suitable material is prepared for them and not necessarily at regular intervals. They will not represent work done by one person or institution but will be of a more general nature, subject to acceptable contributions from all paleontological workers. They will, we believe, serve as a receptacle for articles too technical or long for the ordinary monthly periodicals and too important to admit a delay of from one to an indefinite number of years in a government printing office. Moreover, the desirability of amassing articles relating to one branch of knowledge in one publication, must be evident to all.

In 1932, Harris founded the Paleontological Research Institution (PRI) to insure that his journal, collections and library would be preserved for posterity. Today, **Bulletins of American Paleontology** is the oldest continuously published paleontological journal in the Western Hemisphere and among the three or four oldest in the world. It will celebrate its centennial in 1995. A companion journal, **Paleontographica Americana**, founded in 1916, serves as an outlet for works longer than 200 printed pages. Harris' tradition of reprinting historically important works has also continued as PRI's Special Publications series, which now includes new works on fossils as well as Recent mollusks, many directed at non-professional readers.

From the beginning, PRI has been a membership organization. Its more than 1000 members worldwide receive a quarterly newsletter of paleontology, **American Paleontologist**, and a one-third discount off the list price of all publications. Membership is currently \$20 per year. For information on membership or publications contact: Paleontological Research Institution, 1259 Trumansburg Road, Ithaca, NY 14850. (607) 273-6623 FAX (607) 273-6620.



Publications on mollusks currently available from PRI include:

Perry, L.S. and J.S. Schwengel. 1955. **Marine Shells of the Western Coast of Florida**. 262 pp., 55 pl. PRI Special Publication No. 1.

Conrad, T.A. 1963. **Fossil Shells of the Tertiary Formations of North America (1832-1837)**. [facsimile reprint of the 1893 republication by G.D. Harris, with Preface by K.V.W. Palmer]. 121 pp. PRI Special Publication No. 3.

Olsson, A.A. 1964. **Neogene Mollusks from Northwestern Ecuador**. 258 pp., 36 pls. PRI Special Publication No. 4.

Tuomey, M., and F.S. Holmes. 1974. **Pliocene Fossils of South Carolina, containing descriptions and figures of the Polyparia, Echinodermata and Mollusca**. [facsimile reprint of the 1857 edition, with Preface by W.V.W. Palmer, and Addendum by D. Wilson]. 152 pp., 28 pls. PRI Special Publication No. 12.

Vokes, H.E. 1980. **Genera of the Bivalvia: a systematic and bibliographic catalogue** (revised and updated). 335 pp. PRI Special Publication No. 17.

Olsson, A.A. 1993. **Papers on Neogene Mollusks**. [facsimile reprints of three classic but hard-to-find papers by Olsson: "Some Tertiary Mollusks from South Florida and the Caribbean" (PRI Special Publication No. 9), "Notes on *Siphocypraea*" by Olsson and R.E. Petit (Bulletins of American Paleontology, Vol. 54, No. 242 (1968)), and "Some Neogene Mollusca from Florida and the Carolinas" also by Olsson and Petit (Bulletins of American Paleontology, Vol. 47, No. 217 (1964)). With a new Foreword by R.E. Petit and a Bibliography of Axel Olsson by D.R. Moore.] PRI Special Publication No. 19.

Majima, R. 1989. **Cenozoic fossil Naticidae (Mollusca: Gastropoda) in Japan**. 159 pp., 14 pls. Bulletins of American Paleontology, Vol. 96, No. 331.

Vokes, E.H. 1989. **Neogene paleontology in the Northern Dominican Republic: 8. The family Muricidae (Mollusca: Gastropoda), together with Vokes, H.E. Neogene paleontology in the Northern Dominican Republic: 9. The family Cardiidae (Mollusca: Bivalvia)**. Bulletins of American Paleontology Vol. 97, No. 332.

COA 1994: THE TEXAS CONNECTION

by Barbara J. Elliott

Those Texans sure know how to host a convention! It officially began Sunday, July 17th. However, there were a lot of familiar faces at the beautiful Marriott Bayfront on Saturday — all eager for the activities to get underway. Many of the early arrivals had attended the AMU convention in Houston the previous week.

This was a very well-planned and organized convention. Everything moved along like clockwork. Now, that is a difficult undertaking for one club, but this was accomplished through the combined efforts of five clubs across the state: the Coastal Bend Shell Club of Corpus Christi, the Houston Conchology Society, North Texas Conchological Society, San Antonio Shell Club and the Sea Shell Searchers of Brazoria County. Quite a feat!

On Sunday evening, after greeting old friends and new friends, we were raring to go, and were treated to programs on marine and land mollusks of south Texas. Theresa Stelzig showed us the shells of the Texas coastal bend area. Jane Deisler-Seno, of the Corpus Christi Museum of Science and History, gave us information on the local land snails, which she calls "LBJ's," (little brown jobs).

The opening ceremonies took place on Monday afternoon followed by a program by Dr. J.W. Tunnell of Texas A & M at Corpus Christi featuring the beautiful coral reef mollusks in the southern Gulf of Mexico. Also, an interesting study by David Hicks, of the Center for Coastal Studies, of the brown mussels which have taken over the Texas and Mexico gulf coasts in the past four years. Dr. Emilio Garcia of the University of Southwestern Louisiana gave a fascinating account of shelling the Tuamotu archipelago.

18100 Wild Pepper Court, Punta Gorda, FL 33982-9686

Monday evening we attended a wonderful welcome fiesta and enjoyed music and food with a Mexican flavor.

Tuesday morning saw the first of the complimentary continental breakfasts in the 18th floor Hospitality Suite. Each morning, a different club from the Texas Connection provided coffee, juice and breakfast breads. These started the day for the many of us who were hiding out from those fabulous omelettes in the Marriott breakfast buffet line.

Tuesday was full of interesting and entertaining programs interspersed with trips to the silent auction tables. Brian Hayes gave us a fascinating underwater tour of South Africa, its reefs and rare mollusks. Chris Takahashi also went underwater to show us some Hawaiian endemic species. Kevan Sunderland awed us with some of the 70 species of Caribbean epitoniums. Carole Marshall ended the morning by bringing us some food for thought in the form of recent changes in the classification of names within the Pectinidae.

Gene Everson started off the afternoon with beautiful slides of the shells he acquired during 1993, describing the manner in which he obtained each one. Betty Jean Piech entertained the group with her unique brand of molluscan trivia.

Then followed the annual meeting. The Nominating Committee presented the slate of officers for 1994-95 and they were unanimously elected. Your new officers are:

President	Linda Koestel
Vice President	Dave Green
Secretary	Linda Brunner
Treasurer	Walter Sage
Trustee	Jean Roe



Our TEXAS CONNECTION hosts, the Coastal Bend Shell Club, wearing their convention shirts.

Don Pisor gave us a tempting preview of the 1995 convention to be held in San Diego June 23-29, 1995. A sunset cruise on Corpus Christi Bay brought Tuesday to a close.

On Wednesday there were two more programs. Dr. Eliezer de C. Rios had slides of some of the deep water Brazilian mollusks recently deposited in the Rio Grande Museum in Brazil. Some of these come from as much as 1000 meters deep and are very minute in size. Bob Lipe displayed more of his excellent photography in describing the foot of a variety of mollusks.

One of the highlights of our annual convention is the auction. Wednesday afternoon the hall filled with eager conchologists as auctioneers Al Deynzer and Dave Green brought in a record \$14,726 to the COA treasury. The auction income allows the COA to fund grants to those engaged in molluscan

and molluscan-related research. We know Dr. R. Tucker Abbott, our Grants Director, will be most happy to hear these results. He was not able to be with us this year, and we all miss him very much and wish him well. We also missed Ben and Josie Wiener and we hope Ben is back at home now and doing well. There were other regular convention-goers who were missed — too numerous to name — and we hope to see all of you in San Diego.

On Thursday morning Hank Foglino enlightened us by sharing his knowledge of oceanography as it pertains to the distribution of species. Richard Goldberg's talk and beautiful slides on the opercula of rare and unusual land snails brought our programs to a close.

(Continued on page 20)



1993-94 President Doris Underwood and 1994-1995 President Linda Koestel



1993-1994 COA Board of Directors in a break from their meetings.

Gertrude Moller and Bernie Pipher sample the delicious food at the Fiesta Welcome Party.



The Breakfast-Place-To-Be, in the 18th Floor Hospitality Suite.

We then boarded shuttle buses for a field trip to the Texas State Aquarium. This is an exciting place to explore the underwater world. A live *Cypraea cervus* was spotted soon after our arrival. We enjoyed the reef atmosphere, the colorful fish, the mollusks, turtles and playful otters.

Thursday afternoon the Bourse opened and the feeding frenzy began. There were 22 dealers with something for everyone.

On Friday afternoon we went on a field trip to the Corpus Christi Museum of Science and History. We were treated to most interesting behind-the-scenes tours of the marine science department and the second floor history work/storage area. Following the tours we were free to explore the attractive exhibits and, of course, the gift shop.

The Banquet brought us to the end of our Texas week. The table favors and centerpieces were real works of art, thanks to Ellen Strasser, Virginia Spoor and the host of others who worked on them. The centerpieces were Texas bluebonnets made entirely of painted mussels and coquinas. The favors were cactus plants made of smaller sizes of the same shells.

The banquet program was given by Dr. Hank Chaney. Dr. Chaney comes to us from the Santa Barbara Museum of Natural History where he is in charge of gastropod mollusks. He took us on a trip exploring the remote islands of Clipperton, Clarion and Cocos in the tropical southeastern Pacific. His photography was superb and the dialogue was both interesting and entertaining. These are extremely remote areas which we are not likely to have a chance to see again.

There were five raffle items which we were allowed to gaze upon all week. The winners, the shells they won and their donors were:

Linda Brunner — Set of 4 framed Muricidae works of art, donated by Dr. Emily Vokes.

Ethel Gettleman — *Perotrochus westralis* (Whitehead, 1987), donated by Fran Ariens.

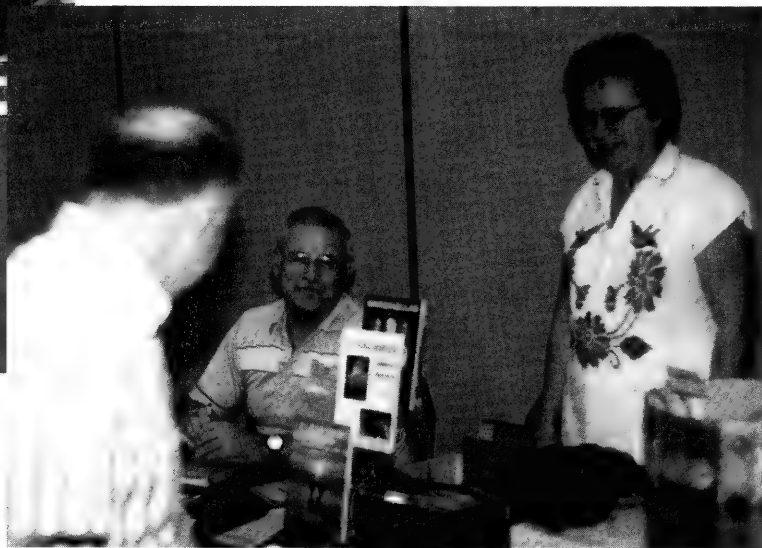
Herb Young — Cluster of 2 *Spondylus americanus* (Hermann, 1781), donated by Thom Anderson.

Huck Lieberman — *Fusinus longissimus* (Gmelin, 1791), donated by Donald Dan.

Linda Koestel — wood carving of *Strombus listeri* (Gray, 1852), donated by Phil Schneider.



Bunny and George Cook of Hawaii, two hopeful bidders at the terribly tempting silent auction tables.

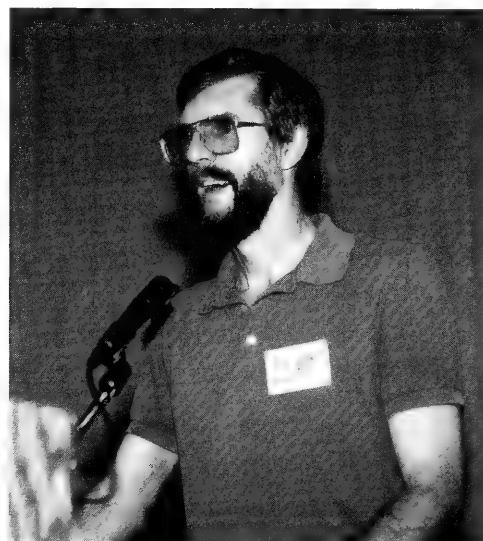


Bob and Betty Lipe talk to fan Hans Reiman at the Authors' Autograph Session.



Auctioneer (and new COA VEEP) Dave Green sells a Texas-size Junonia.

Brian Hayes, COA member from South Africa, narrating his program on living South African Reef Mollusks.



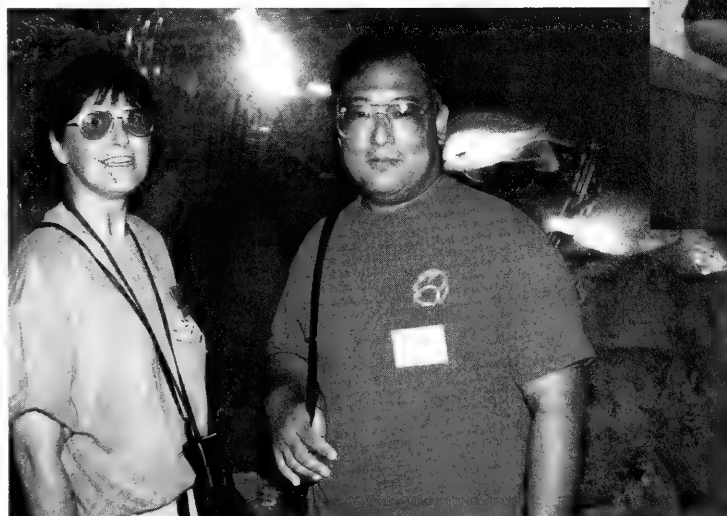
The Texas Connection put on the most financially successful as well as the best-attended convention outside of Florida. On opening day there were 230 persons registered.

During the week there were those whose efforts seemed especially to stand out. One of those is Dave Green who graciously and skillfully served as emcee for the proceedings. Dave also did a great job as auctioneer, as did Al Deynzer. Alice Pullin, assisted at times by her young granddaughters Katy and Holly, saw to it that everyone got a doorprize. Jean and Charlie Roe, Convention Chairpersons, seemed to be wherever they were needed, solving problems and smoothing wrinkles. These are just a few of the many people who worked to bring it all together. Some were visible, but many others worked just as hard behind the scenes. Of course, there was Jerry Clampit who was everywhere taking photos. We hope he had a chance to enjoy the convention as well as record it.

The week I look forward to every year has come and gone for 1994. It was one of the very good ones. We will not soon forget "The Texas Connection."



Dr. Henry Chaney, the 1994 Banquet speaker.



REMINISCING ON THE TEXAS CONVENTION

by Eddie Buelke

The Conchologists of America Convention is more than just a convention for shellers and shelling. It is a time to renew old friendships, strengthen current friendships and start new ones. It is a time for exchanging information and ideas. It is a time for quiet moments, sharing in past experiences in our lives. It is a time for hospitality and caring about our fellow human beings. It is a time for end-of-the-day meals together discussing our "finds" and purchases of the day. It is a time for cultural exchanges and, of course, the "English Lessons." It is all this and much more that makes the COA what it is.

So to Cheryl and John Jacobs, Colleen Abshire, Deena Martin, Bernie Brill, Mary Ruth and Hank Foglino, Walter Sage, my Texas Connection sidekick Jordan Star, and to Helen Madow, my New York Shelling mate, I say,

Thank you,
Ed [and Joy] Buelke

P.O. Box 591, Morwell, Australia



Our fabulous Convention Chairs, Theresa Stelzig, and Jean and Charlie Roe with Texas Plaques.

Sue Vaughn and Chris Takahashi at the Texas State Aquarium.

*Watch for more photos in December.
There were so many good ones that we simply can't publish them all in this issue.*

THANKS FOR A GREAT COA AUCTION!

On Wednesday afternoon, July 20, the annual COA Auction was held in the Nueces Ballroom of the Marriott Bayfront Hotel in Corpus Christi, Texas. As auction chairpersons, Lucille and I were eager to get the auction under way since we'd had such great response to our request for donations from friends of COA. Once again Al Deynzer of Sanibel Island and I teamed up to do the auctioneering. The bidding proceeded at a rapid pace thanks to the wonderful donations, and we soon realized this year's auction would be very successful for COA. The pace of bidding was maintained throughout the auction, with almost all the bidders remaining until the final bid. It was a great turnout of members and they really did bring their checkbooks. After the smoke had cleared, Walter Sage and Doris Underwood did a preliminary tally at \$14,726, a new high.

Fran Perry of the Coastal Bend Shell Club presented the attendees with six exciting silent auctions, two of them during the Welcome Party, another COA first. The response to these first two set the tone for the remaining four on Tuesday and Wednesday. The super job Fran and her workers did organizing and presenting these events drew outstanding participation and brought in \$3,459.

Lucille would like to offer a special "Thank You!" to all the members and friends — the magnitude of your generosity was simply overwhelming, and without you the GREAT TEXAS AUCTION would never have been a reality. And to all of you who so generously spent your money, thank you for your support and your DOLLARS! I hope you enjoyed that hot TEXAS afternoon as much as we enjoyed bringing it to you. Thanks to Al Deynzer, Walter Sage, Doris Underwood, Lucy Clampit, Linda Brunner, Mary Martin, Ted Strasser, Kristen Green, Charles Roe and all the other workers for their loyal support.

Now we get ready for next year in beautiful San Diego, site of the 23rd annual COA Convention. I am sure Don Pisor, Convention Chairman, and all his staff will do a super job with next year's auction. I encourage each of you to be as generous next year, and, just maybe, an even bigger auction will go into the books.

It was truly a labor of love, and we are very grateful for your help and cooperation. We offer a BIG TEXAS THANK YOU. See you in San Diego.

Dave and Lucille Green
COA Auction Chairpersons

1994 GRANT RECIPIENTS ANNOUNCED

Annually COA awards to workers in malacology and related fields a total of \$6,000 in research grants. In early January 1994, on behalf of the Grants Committee, COA member John Odenwald mailed to 63 institutions and mollusk journals our 1994 grant application notices. The applications received prior to the May 31 deadline amounted to a total request of \$21,341.

The Grants Committee (Chairman Dr. R. Tucker Abbott, Dr. Hank Chaney and Walter Sage) selected from among the applicants the following nine recipients, which the COA Board of Directors and the membership subsequently approved:

• David J. Brown , Duke University Marine Lab: Effects of herbicides on <i>Mercenaria</i> gonadal tumors	\$750
• Marian E. Havlik , La Crosse, WI Wolf River Unionid Survey on Translocations	\$600
• Elizabeth L. Raiser , Florida Museum of Natural History Electrophoretic study of <i>Eulimia (Goniobasis)</i> in Florida	\$750
• Paul J. Morris , Paleontological Research Institution Ithaca, New York. Field work on the Alabama Paleogene Sabinian stage	\$610
• James W. Fatherree , University of South Florida Late Cretaceous Seasonality (field work)	\$1,000
• Jeff Goddard , Oregon Institute of Marine Biology Survey of Opisthobranchs of northern Oregon	\$370
• Sandra A. Alvarado , Texas A & M, Corpus Christi Ecological study of mollusks of Mexico reef area	\$1,000
• Frank R. Thomas , University of Hawaii Ethnoarchaeology of Kiribati, Gilbert Islands (lab work)	\$800
• Richard L. Squires , California State University, Northridge Field work, Doty Hills, Washington, Eocene Fossils	\$120

Each of the recipients of these grants is asked to write a popular account of his research, which will be published in coming issues of American Conchologist. COA raises the money for these grants through its annual auction.

NORTH AMERICAN FRESHWATER MUSSELS

PART II
IDENTIFICATION, COLLECTION, AND
THE ART OF ZEN MALACOLOGY

by G. Thomas Watters

The identification of unionids can be exasperating. Seemingly each creek and river has its own form of even the most common species. For instance, specimens of *Fusconaia flava* from a large river look so unlike those from a small creek that most people would not believe them to be the same species (Figs. 1, 2). And in fact, they have been given different names. But study specimens from the creek to the river every couple of miles and you will see one gradually grade into the other. It is a cline — a series of morphological changes across the range of the animal. We suspect that such a cline is related to the environment, but exactly why the change takes place is only now beginning to be understood. Similar clines appear in many species, such that individuals of two unrelated species may look more like **each other** than like their conspecific downstream cousins.

In addition to clines, other sources of confusion occur, such as the variation found between rivers. This probably is due to genetic shift and isolation from other populations in other places. Furthermore, differences in water hardness and temperature may create very different looking individuals of the same species. Unrelated species may look very much alike because of a convergence of shell characteristics. As in marine shells, those spines, knobs, and ridges may perform a function. If that function occurs in many unionids, regardless of their relationship, then the same sculpture may occur many times over in unrelated species. The shells have independently evolved the sculpture through convergence. As an example, the relatively common *Cyclonaias tuberculata* (Fig. 3) looks very much like the extremely rare *Quadrula intermedia* (Fig. 4).

The moral of these cautionary observations is simple: you need to look at **a lot** of specimens before you may be able to identify some species. Although books and keys exist, the best way to do this is at a museum. You need to get a feel for the species. Often I have taken students and colleagues into a creek and held up a shell and said: "That's *Elliptio dilatata*." Someone will ask: "How do you know?" And after some thought I'll say: "It just looks like *Elliptio dilatata*." Such Zen malacology is not very helpful to the student, but it emphasizes the difficulty in dealing with very variable species.

So what do unionid workers look for in a shell to determine that it is *Elliptio dilatata* and not something else? Usually no one thing will identify a unionid, but rather a combination of characteristics must be used: shape, coloration (both inside and out), hinge teeth, adult sculpture, beak sculpture, and oth-

(Continued on next page)

Division of Wildlife, Ohio Department of Natural Resources, Fountain Square, Columbus, OH 43224 and Aquatic Ecology Laboratory, Ohio State University, 1314 Kinnear Rd., Columbus, OH 43212

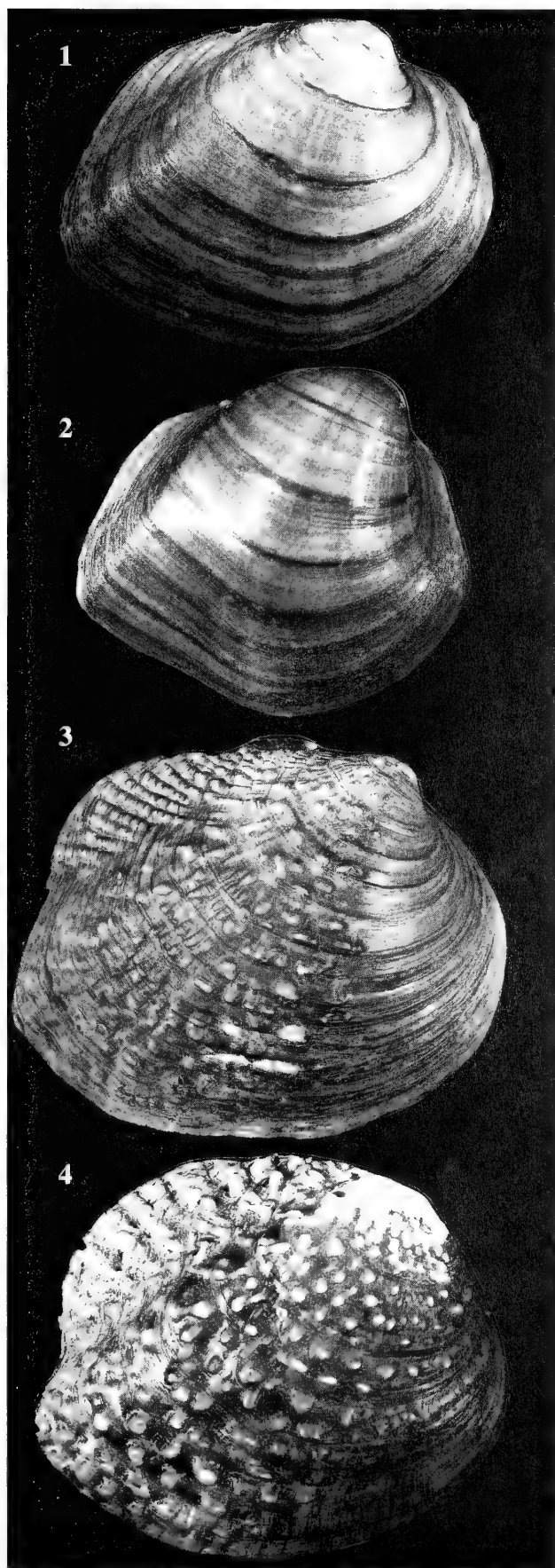
Figures 1-2. *Fusconaia flava* (Rafinesque, 1820).

Figure 1. Headwater form, Tippecanoe River, IN (GTW).

Figure 2. Big river form, Mississippi River, IL (GTW).

Figure 3. *Cyclonaias tuberculata* (Rafinesque, 1820). Fish Creek OH (GTW).

Figure 4. *Quadrula intermedia* (Conrad, 1836). (OSUM) (FE). OSUM = Ohio State University Museum of Zoology. FE = Federally endangered.



ers. The emphasis on these traits differs from species to species. Shape may be modified by the environment, but generally very elongate species are never round and vice versa. But in several genera, the shells display sexual dimorphism, where the males and females look very different. Obviously, it helps to know which groups have this characteristic.

Coloration may be very consistent in one species, and a good diagnostic feature, while in others no two individuals are colored the same. On the other hand, the nacre color of most species is fairly constant. In *Elliptio dilatata* it is purple 99% of the time — unless you happen to be in one of the few creeks having “odd” populations with purple, white, and salmon colored individuals all together. Of course, if your mussel is living, you will have to kill it to identify the nacre color.

Hinge teeth, like nacre color, can only be seen in dead shells, but they are a good diagnostic feature. The length of the teeth, their thickness, how they are oriented, and whether they are arched are key characteristics. Some groups, like *Anodonta*, lack teeth altogether.

Sculpture is often bewilderingly variable between populations. In one river, individuals may be covered with coarse bumps or knobs, while in another the sculpture will be all but absent. Beak sculpture is the most consistent feature, but also the most elusive. Many species have post-metamorphosed juveniles with a distinct sculpture, called beak sculpture. This sculpture often is not present on any but this earliest part of the shell. Unfortunately, wear and tear, plus acids in the water, usually abrade and dissolve this region of the shell away. Such is often the case on the eastern seaboard and in the Gulf states. All these characteristics must be taken into account and weighed before a species determination is made. Basically the same method as for any other shell — it is a matter of knowing what to look for. Figures 5 - 10 illustrate some of the great variability in unionid shells from North America.

Unlike the characteristics for species, which are based largely on shell features, the higher taxonomic groups are established on the anatomy of the animals. To me, many of these “groups” have an artificial flavor about them. One genus, *Lexingtonia*, is diagnosed mainly from the color of the eggs. There are only two species in the genus, a large, heavy species from the Tennessee River system, and a small, thin species from the James River on the eastern seaboard. Outside of the egg color, the two really don't have very much in common. Other genera are based on which gills, and portions of gills, are used as marsupia for brooding the glochidial larvae. But individuals with the “wrong” marsupia are not uncommon. Most of these higher taxonomic “schemes” seem to ignore the possibility of convergence in anatomy — a feature so common to the shells. Today these problems are being tackled by methods borrowed from immunology and genetics, and we hope to have a more realistic picture in the near future.

It is very rare to see the description of a new unionid from the United States these days. This is not because there are none out there, or because the above mentioned characteristics are too confusing. Rather, it is a reflection of the taxonomic nightmare that exists in the group already. Marine molluscs, particularly in the Caribbean, have recently experienced a sad trend of frenzied splitting, and the formation of new species out of mere color forms, single specimens, and even fragments of shells. Systematists will spend years undoing this tangle of bad science. I know this for a fact, because unionid systematics are still plodding through the same nomenclatural maze made by Constantine Samuel Rafinesque and Isaac Lea over a hundred years earlier.

Rafinesque is perhaps most famous for being the unwitting brunt of a hoax by James Audubon. Audubon described to Rafinesque (in mock seriousness) a fictitious three-shelled mollusc. Rafinesque duly described and illustrated the beast, sight unseen, as *Tremesia patelloides*. His treatment of real molluscs was not much better. His descriptions were vague and his illustrations little more than molluscan stick-figures. After careful analysis, science is now giving him credit for naming many of the Ohio River system unionids, but this was not always so. Contemporaries and later workers had little good to say about Rafinesque, and most simply ignored his works. One such person was Isaac Lea.

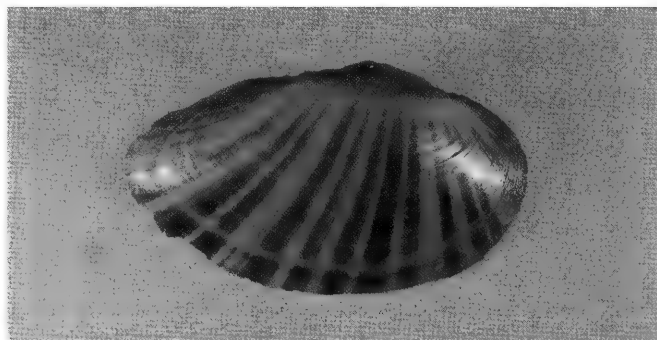


Figure 5. “*Lampsilis*” *subangulata* (Lea, 1840). Apalachicola River system, FL, GA (OSUM).

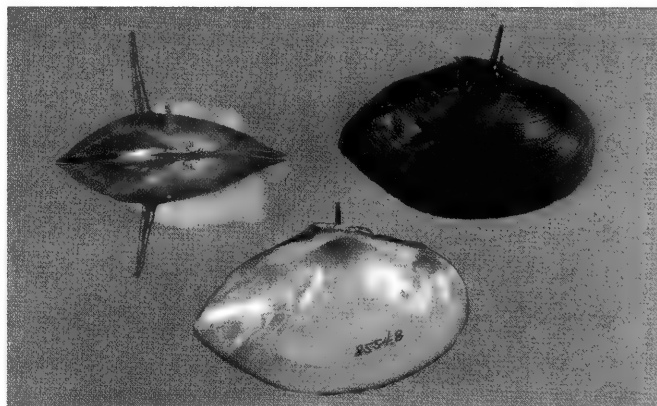


Figure 6. *Canthyria spinosa* (Lea, 1836). Endemic to Altamaha River system (OSUM).



Figure 7. *Lampsilis fasciola* Rafinesque, 1820. Ohio River System (OSUM).

Between 1827 and 1874, Lea described hundreds of species of unionids, many based on only the slightest of differences between specimens. He also ignored the earlier names of many other workers, or simply described his specimens as new apart from them. He did not understand the natural variation in unionid characteristics, and named every possible variant as new. There is little doubt that he described some species many times. Compounding the problem was his propensity to publish the same manuscripts in different places, often privately. Any modern unionid systematist now must wade through this morass of names and dates for nearly any species or group.

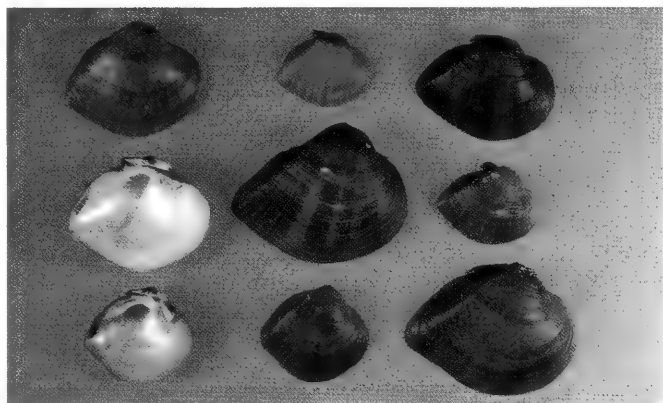


Figure 8. *Truncilla truncata* Rafinesque, 1820. Mississippi River system (GTW).



Figure 9. *Quadrula cylindrica cylindrica* (Say, 1817). Mississippi River system (OSUM).

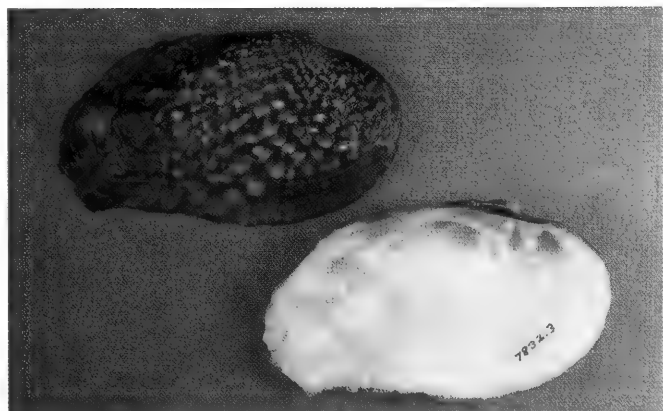


Figure 10. *Tritogonia verrucosa* (Rafinesque, 1820). Mississippi River system (OSUM).

Despite all these caveats and cautions, identifying freshwater mussels is not difficult, just different. We know we don't use the same features to identify *Murex* as we do *Conus*, and the unionids are just another group with their own set of unique features. To help you in your quest, a short list of some of the literature available that you will find useful is included at the end of this essay.

How does one go about finding unionids? Well, that depends upon what species you wish to find. Bear in mind that there are big river species, creek species, and even lake species. For lakes and large rivers, you will need diving equipment. Be forewarned — diving in rivers is a dangerous hobby. Visibility is often nonexistent, and numerous snags and obstructions, not to mention strong currents, may hamper your search. Collection will be largely by feel in total darkness. In many rivers, tugs pushing barges are common. These vessels cannot (or will not) quickly stop or turn, and you must be prepared to get out of their way, and out of their wake. In contrast, creek collecting can be easily accomplished. I use a glass-bottom bucket and a regular goody-bag. Most mussels will be buried just to the posterior margin of the shells. What you will see are the openings to the siphons, and little else. There is no doubt that the ability to find unionids is an acquired trait requiring lots of practice. If you are lucky, muskrats will have done your work for you. These industrious animals dive for mussels, bring them to the river bank, wait for them to expire, and then eat the soft parts. What they leave behind are beautifully cleaned shells, sometimes numbering in the thousands.

It must be strongly pointed out here that you must obey all laws concerning the collection of mussels. These laws vary greatly from state to state. Some states don't seem to care, while others will have no pause in throwing you in jail. In some states, a fishing license may be all that is needed. In others you will need a scientific collecting permit. Of course, the collection of state or federally endangered species carries severe penalties. These regulations are necessary to protect an already overharvested group of animals. Just as important as securing the permission of the state is securing the permission of the landowner. As was vehemently pointed out to me when I strayed on private property — "If you don't own it, then someone else does and you're trespassing!" Riparian rights are complicated and differ from state to state. When possible, try to get permission. Lastly, if you do collect, it is best to take only dead shells until you are familiar with identification. You do not want to find that you have killed an endangered species by mistake.

We started this series with the finding in 1987 of the extremely rare *Epioblasma obliquata perobliqua* in a small Ohio creek. To our knowledge, it does not occur anywhere else on earth. Until last fall, no one had found that species again, and I was convinced that I was the last person ever to see it alive. But then I found another, in the same creek. Can two specimens, both males, separated by miles of creek, constitute a viable population? How many others are out there? Can this species be saved? Can we protect this creek? As the epilogue to this story, let me tell you **why** I was out there last fall. We were assessing the damage caused by the rupture of a pipeline that dumped 35,000 gallons of #2 diesel fuel into this tiny creek....

The author wishes to thank Dr. David Stansbery, Ohio State University Museum of Zoology, Columbus, for permission to photograph many of the specimens used in this article.

See page 18 for list of useful literature.

REVIEW

ARCHITECTONICIDAE OF THE INDO-PACIFIC (Mollusca, Gastropoda) by Rüdiger Bieler. 1993. 376 pages, 286 figures, 3 plates 6 3/4 X 9 5/8", softbound. Gustav Fischer Verlag, Stuttgart, Germany. About \$100 U.S.

In all honesty, Rudiger Bieler's monograph, *Architectonicidae of the Indo-Pacific*, is not a book for everyone. Among collectors, only those who specialize or have an otherwise strong interest in the elegant sundials, along with some flagrant and unregenerate book buyers, are likely to spend the approximately \$100 that this softbound book costs. That said (up front — a book's high cost is likely the first concern hobbyists express) we can put the matter behind us and get on with a more fruitful look at this really fine work. It is a superb example of the genre, a systematic monograph at its very best.

Dedicated to an outstanding malacologist, Richard S. Houbrick, and written by another, Dr. Bieler's revision of the Architectonicidae (Order Heterostropho) is based on new field studies, on all available original publications and type material, and on examination (personal in most cases, photographic only where necessity dictated) of more than 22,000 specimens in over 50 collections worldwide, many of which he visited. It is a product of a careful attention to detail, of long and excellent research, study and field work, and of a dedication to providing every aid and convenience possible to the reader. An outgrowth of his research for his PhD. thesis at the University of Hamburg, it is the result of ten years' work.

Architectonicids are planktotrophic, spending a long veliger stage dispersing through warm-temperate to tropical regions. They are also the only family to possess sinistral-coiling protoconch and dextral teleoconch. Dr. Bieler has done much work on their protoconch and teleoconch shells and has determined the shell of this early stage to be of great importance in identification. His detailed descriptions of the recognized taxa, as well as the 470 SEM and light photographs, place special emphasis on this aspect of shell anatomy. A combination of sculpture, shape and color of the early whorls is used to distinguish among species. Radula and protoconch are more impor-

tant at the generic level. Maps, graphs and drawings and summarized information on distribution, ecology, development, anatomy and reproduction round out each species discussion. (A study of the information on habitat and feeding behavior will bring a gleam to the eye of the self-collector!)

The family is hereby arranged in 11 genera, and of the 250 previously introduced taxa discussed, 88 are considered valid; twenty species are described as new to science, while eight more unnamed "forms" need further study. The large, crisp and clear photos accompanying the descriptions make for much easier identification of the species in our collections than was formerly possible. The introductory material wherein are discussed such topics as the shell and operculum, anatomy and biology, zoogeography, and the fossil record, is exceptionally clearly written, and malacological jargon, which makes many such works unreadable to any amateur but the most advanced, is held to a minimum. Reading it is an edifying pleasure.

Architectonicidae of the Indo-Pacific is concluded by a lengthy and most impressive list of acknowledgements (in themselves almost a map of Dr. Bieler's ten-year study), a taxon index and a nearly 800-title bibliography. What a really nice piece of work it is! (A COA grant allowed the publication of one of the three color plates, a contribution from which we can derive much satisfaction!)

This review isn't going to conclude by saying, "Rush right out and buy your copy!" — either you want it or you don't — or even by saying that it will be a necessary part of every serious conchologist's library — of course it will. Instead, it urges you to get a look at it if you can. Sample a bit. Taste the prose and peruse the photos. Read the Introduction, and perhaps Section B containing his text conventions. You'll discover for yourself what a really exceptional revision of an intriguing family it is. And you just may find you want to own the book. You might even start collecting Sundials. —LS

GRAND THEFT AT SWISS SHELL SHOW

by Donald Dan

During the night, thieves broke into the premises of the 13th International Shell Show in Lutry, Switzerland and stole specimen shells to the value of US \$350,000. The thieves gained admission through a utility room window near the school auditorium where the show was being held. Upon discovery of the theft, the local police made an exhaustive effort to recover fingerprints. Recently, there have been several serious break-ins and thefts of shells in Italy; possible connection between the Swiss incident and the Italian thefts is being investigated.

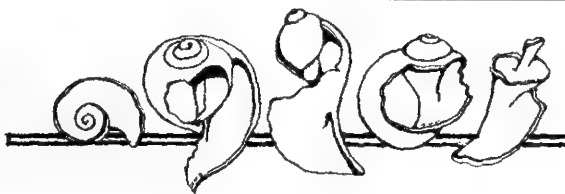
Twenty-one dealers have reported their losses to the police for the total of \$350,000. That figure is likely to be revised as more is known. Several dealers have not reported their losses yet. Also, some dealers based their loss estimates on retail value, while others reported values on the basis of cost. Thus the revised loss estimate should go much higher.

The annual Swiss shell show has been one of the most popular events of its kind in Europe. It has always drawn a

cosmopolitan mix of dealers and collectors from all over the world. Large numbers of rare shells were displayed, many in a very casual manner. Switzerland, being a low crime nation, made most dealers feel at ease and they took minimum precaution. The majority of the losses consisted of the rarest of the displayed shells, including *Cypraea leucodon*, *Entemnotrochus rumphii*, *Lyria lyraeformis*, numerous Australian *Zoila* species, and many rostrate and niger cowries from New Caledonia. The criminals apparently knew very well what shells to take.

All shell collectors and dealers should be alerted to stolen shells which could eventually come on the market. Thefts at COA's Bourse a few years ago and at the Georgia shell show have made us all wary. This grand theft in Switzerland confirms our suspicions that the shell world is not exempt from an escalating crime rate. Should such incidents continue, we could one day see a need to establish a centralized procedure to report suspicious activity or trafficking in stolen shells.

Flotsam and Jetsam



The INTERNATIONAL SCIENTIFIC COLLECTORS ASSOCIATION was founded last year with a primary goal of bringing better recognition to the contributions made to science over the years by the collector-hobbyist, and also of preserving "the traditions and dignity of avocational collecting for scientific purposes as a worthy and honorable pursuit." This group is unhappy with the growing trend toward legislation against scientific collecting hobbies, and plans to act as a clearinghouse for information on such legislation and to inform the public about how tax dollars are spent to enforce such "frivolous laws." Sounds like just our sort of thing, doesn't it? Further information can be obtained from Executive Director Carl Cook, The International Scientific Collectors Association, 469 Crailhope Road, Center, KY 42214, USA. Annual dues are \$15. We'll try to learn more about this new group and its worthy goals.

THE SANIBEL SHELL SHOW featured a new scientific division trophy this year, instituted by the Paleontological Research Institution of Ithaca, New York. With the intention of recognizing and encouraging the work of nonprofessional paleontologists, the PRI Trophy recognizes the outstanding display showing an aspect of the ecology or evolution of fossil mollusks. The first PRI Trophy was awarded to Greta and Andrew Murray for their exhibit of fossils from the Miocene Chipola Formation of the Florida Panhandle.

SPEAKING OF SANIBEL, The Bailey Matthews Shell Museum there received word July 1 that the Florida State Cultural Facilities Program has awarded them a grant of \$241,133 toward construction of the museum building, which is due to be completed in early 1995.

OOPS!

June was a busy month for gremlins. Through a series of comic errors capped by some gross editorial stupidity, Dr. G. Thomas Watters' name was given incorrectly as Dr. Thomas D. Watters in the June 1994 issue. Dr. G. Thomas Watters is the author of the two-part series on North American Freshwater Mussels which concludes in this issue. Our apologies, Dr. Watters.

Kristina Joyce's lovely cover also got mangled. The bottom two paintings were switched in printing. The one on the lower left is *Trophon dalli* (= *coronatum* H. & A. Adams), while the shell lower right is *Trophon clathratus*. The shell in the upper right position, identified as *Trophon fraseri*, is not a trophon at all, Dr. Emily Vokes tells us. Instead it is "some kind of buccinid, a *Neptunea* or something," she says, and wonders if any of our readers might tell us what the triton-turned-buccinid actually is. Apologies to Kristina and to any reader who was confused or nonplussed by our error. Dr. G.

OUR OLD FRIEND OLIVE PEEL has moved to her very first house, in the highest town in South Africa, near the Kruger National Park. She wants all her friends to know her change of address: O. Peel, Box 205, 1100 Belfast, South Africa. Happy shelling in your new garden, Olive.

FROM BEN AND JOSY WEINER all their COA friends: "Congratulations to the Texas Connection for another successful COA convention and fantastic results on the auctions, as our spies reported to us. We are sorry to have missed only our second convention in 15 years of membership. Ben had to try out a different hospital in a different city — this time Baylor Medical Center in Dallas with congestive heart failure. After his release with an order from the doctor of complete bed rest, he wanted to come on to Corpus Christi, but after 32 years of marriage, for better or for worse, I refused. We want to thank all conventioners for their prayers and good wishes, cards and telephone messages. The big get-well card contained 80 names! From Japan to Venezuela! Special thanks for taking time out. We're already planning to see you all next year in San Diego. — Oh yes! I did get some shell fabric shopping done in Dallas, but it just wasn't the same without Walter's company."

THE HEADLEY-WHITNEY MUSEUM was the victim of a \$1,600,000 jewel theft in July. This museum, features fine arts and a shell collection in its own shell grotto, as well as a fabulous collection of bibelots. It is located on a horse farm northwest of Lexington, Kentucky.



Thomas Watters writes us in great wonder that Knudsen described the trophon-that-wasn't in the year 195. Oh, well. The mail's been interesting!

AND, on the masthead, page 2, the gremlins, who have been playing merry havoc with Rich Goldberg's address and his ad ever since he moved to Maryland, have struck again. In March, they stole his new (Columbia) address from the masthead and left us again with the old (Simpsonville) one. Then, in the June issue, instead of replacing the Simpsonville address with his Columbia address, the little rascals gave it to Walter Sage.

Readers, please note: Richard and Meg Goldberg may be reached at and only at: P.O. Box 6088, Columbia MD 21046-6088.

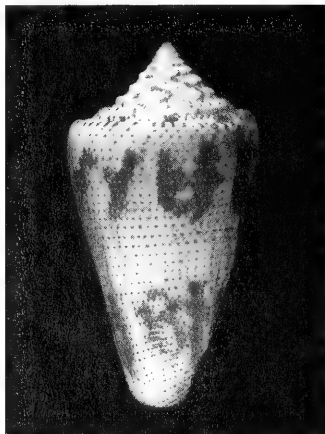
Walter Sage has not moved to Maryland, and still likes to receive his mail at: P.O. Box 8105, Saddle Brook, NJ 07663-8105.

CARIBBEAN CONIDAE PART III

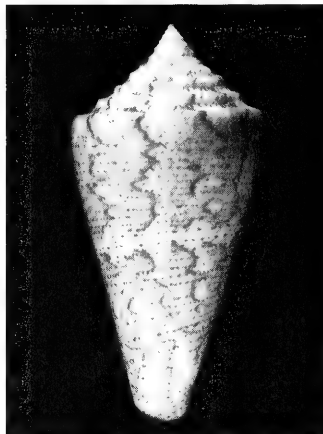
by Kevan and Linda Sunderland



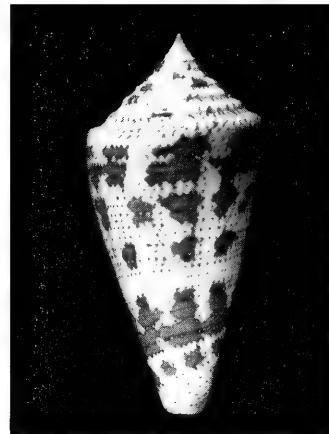
Conus cedonulli cedonulli
Linné, 1767. 54mm. 40' in
sand and coral rubble,
Young's Is., St. Vincent.



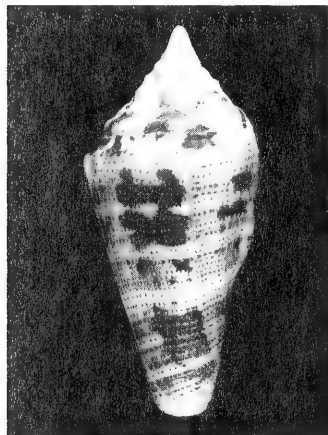
Conus cedonulli dominicanus
Hwass, 1792. 46mm. 60' in sand
and rubble, Grenadines, W.I.



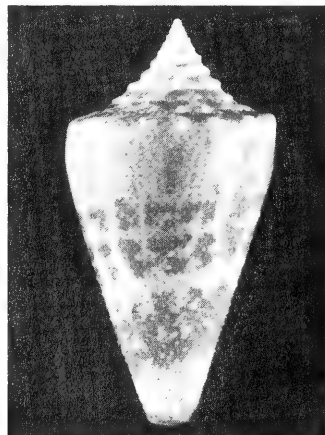
Conus mappa mappa
Lightfoot, 1786. 50mm. 80' in
sand and coral rubble, SE
Tobago, W.I.



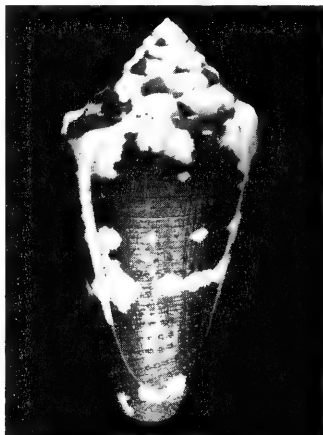
Conus mappa mappa Lightfoot,
1786. 57mm. 500', St. James,
Barbados. Ex: Sander coll'n.



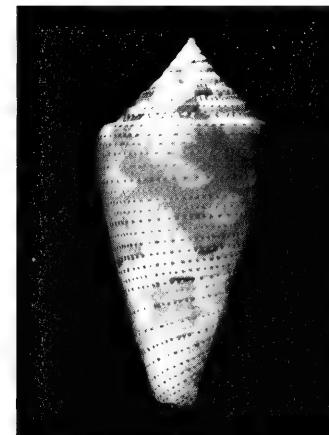
Conus mappa granarius
Kiener, 1848. 50mm. 200' off
Cabo la Vela, Goajira Penins.,
Colombia.



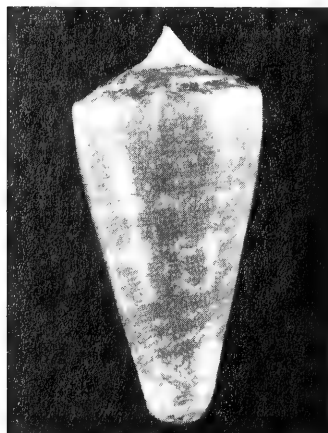
Conus granarius panamicus
Petuch, 1990. 37mm. 40 m.,
Porto Belo, Caribbean
Panama.



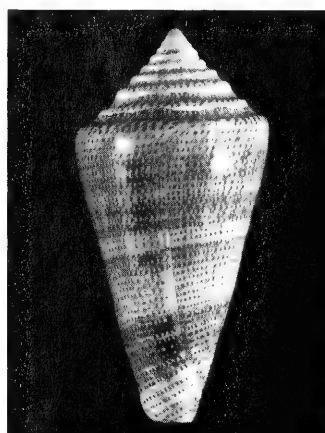
Conus aurantius
Hwass, 1792. 56mm. 5' under
coral, Bonaire, Netherlands
Antilles.



Conus curassaviensis
Hwass, 1792. 41mm. 30' in
sand and rubble, Malmok,
Aruba.



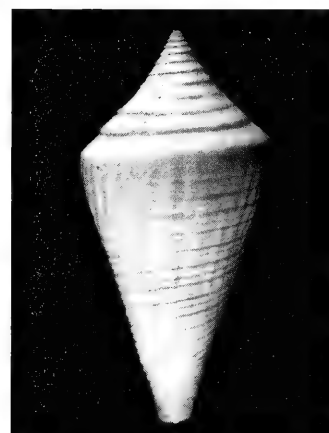
Conus harlandi
Petuch, 1987. 36mm. 40' in
sand, night. Utila, Honduras.
PARATYPE



Conus sanctaemarthae
Vink, 1977. 48mm. 80', off
Goajira Penins., Colombia.

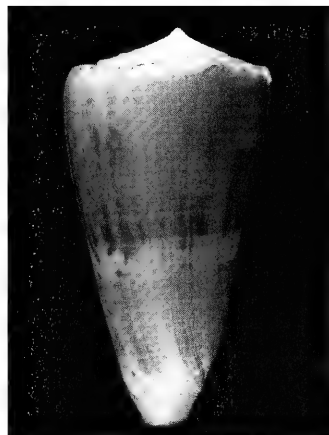


Conus brunneobandatus
Petuch, 1992. 34mm. 200', off
Goajira Peninsula, Colombia.

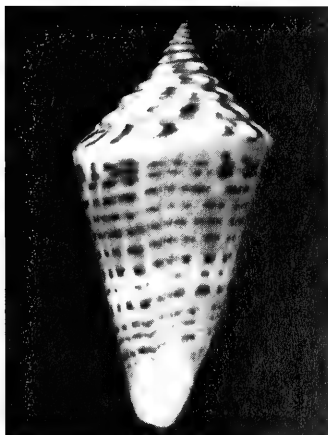


Conus cancellatus
Hwass, 1792. 52mm. 200' in
sponge and coral sand, off Dry
Tortugas, FL.

The intent of these centerfolds is not necessarily to distinguish among valid and invalid species, but to provide illustrations of taxa not popularly available, for the information of the collector.



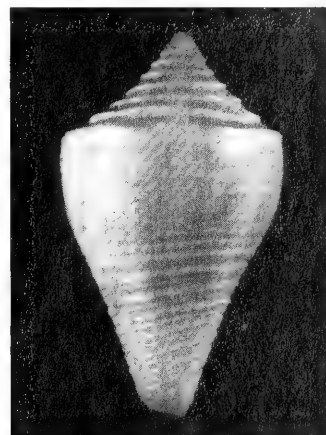
Conus daucus
Hwass, 1792. 66mm. 30' in
sand, Fort de France,
Martinique.



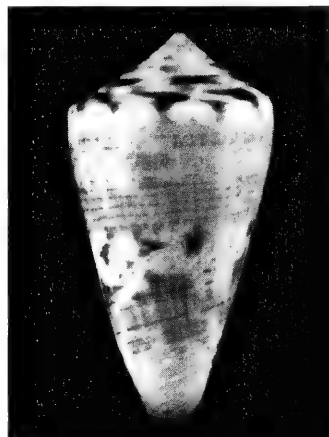
Conus floridanus
Gabb, 1868. 51mm. 1' in
muddy sand and grass, Marco
Is., FL.



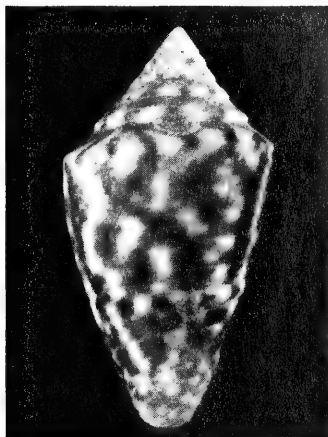
Conus floridanus burryae
Clench, 1942. 28mm. 5' in sand
and grass, Lower Matecumbe
Key, FL.



Conus gibsonsmithorum
Petuch, 1986. 24mm. 200' off
Cabo la Vela, Goajira Penins.,
Colombia.



Conus hennequini
Petuch, 1992. 23mm. 2 m in
sand and rubble, La Vauclin,
Martinique.



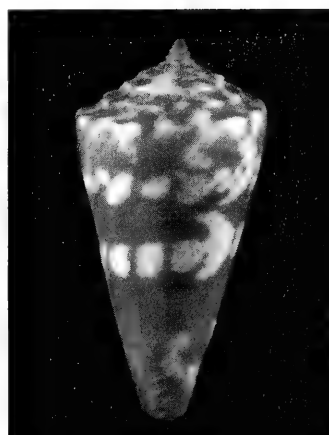
Conus jaspideus
Gmelin, 1791. 20mm. 5' in sand
and grass. Lower Matecumbe
Keys, FL.



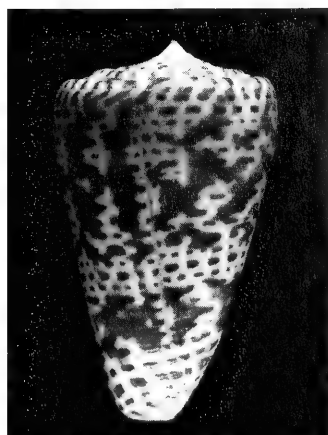
Conus kalafuti
da Motta, 1987. 15mm. 5' on
hardpan, Roatan, Honduras.



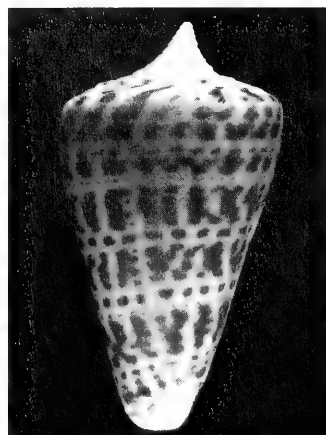
Conus magellanicus
Hwass, 1792. 17mm. 5' in sand
and rubble, Guadeloupe.



Conus sanderi
Wils & Moolenbeek, 1979.
27mm. 500', Barbados. Ex:
Sander Coll'n. PARATYPE



Conus spurius spurius
Gmelin, 1791. 65mm. 20' in
coral sand, Virgin Gorda,
Virgin Islands.



Conus spurius atlanticus
Clench, 1942. 75mm. 5' in sand
and grass, Lower Matecumbe
Key, FL.



Conus spurius aureofasciatus
Rehder & Abbott, 1951. 59mm.
200', sponge and coral sand,
Dry Tortugas, FL.

REVIEW

AUSTRALIAN MARINE SHELLS, *Prosobranch Gastropods Part One* by Barry Wilson with illustrations by Carina Wilson and photos by Patrick Baker. 1994. Graphic design by Robyn Mundy. 408 pages, 44 plates + color illustrations and numerous black-and white drawings and diagrams, 8½" X 12", hardbound. Odyssey Publishing, Kallaroo, Western Australia. \$85 for Volume 1, \$160 for Volumes 1 & 2.

Examining and working with Barry Wilson's new **Australian Marine Shells Part 1** has been a great pleasure. Such a great pleasure, in fact, that we have devoted several pages to illustrating it in *American Conchologist*, under the precept that a picture is worth a thousand words. Count this as a LONG review. The accompanying color plate (page 20), showing some of the mysterious and polymorphic *Zoila*, is direct from the Cypræidae section of Barry Wilson's *chef d'oeuvre*. It illustrates, better than anything we could say, the beauty and quality of Patrick Baker's photographic work and the book's extensive coverage of forms and variations (Barry Wilson has done much work on these Australian cowries and is the authority on the subject).

The page reproduction from the Trochoidea section (page 19) is included to illustrate Dr. Wilson's very precise and lucid descriptions at the species level, and the excellent supraspecific coverage he supplies. (Why isn't the latter included more often?) It also gives us an idea of the superb coverage of groups like the Australian trochids which heretofore have barely been scratched at in popular works. It provides a visual proof of the ingenious way graphic designer Robyn Mundy has with page design (not to mention book design). And it gives a practical look at the really lovely drawings which add life and charm as well as information to the textual section. These are by the author's daughter, Carina Wilson, and are an integral part of the coverage of smaller species. See also the inset here of *Halotis scalaris*, loveliest of abalones, which she renders with all its beauty and intricacy intact.

What more can we tell you? Shall we say the cover design and execution are stunning? Violet-blue and dark-blue shell patterned background on which are superimposed the title in gold and a here's-looking-at-you full color close-up of the eyes and nose of a *Strombus*. Even the spine is glorious in color and design. It'll pass as a coffee-table book in a minute. But it's most emphatically not one. Within the covers is as complete a coverage as your heart desires, both visual and verbal, of the molluscan families from the limpets through the cowries, Tonnoidea, wentletraps and Eulimas — this is only Part 1, remember.

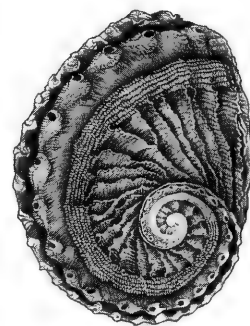
Shall we tell you that the obligatory introduction to shell collecting is there, of course? And this one is admirably written and contains all sorts of molluscan nuggets to make reading it more worthwhile than the usual introduction to shell collecting (Reviewer's Aside: Why do all the shell-book-writing guys include these? Do they really think someone who puts out \$160 for a book on shells is going to be so new to the game that he must be told to put baby oil on his shells? That he'll

need to learn how to beach-collect, or be informed about Linnaeus's system or what a genus is? And while we're at it, those accompanying maps are pretty pointless too. If I need a map of Australia, I need a MAP of Australia, showing me Denmark Beach, Port McDonnell and for heaven's sake, Geographe Bay, and the Great Barrier Reef in detail, not just a prettily-colored outline with a few key localities roughed in.)

And shall we mention the really glorious and revealing live-animal shots interspersed throughout? Or the fact that Part 1 has its own index so that it can be used separately from Part 2? Or that Barry Wilson has thoughtfully placed the references within the sections to which they pertain? All these excellences combine to make **Australian Marine Shells Part 1** the conchological publishing event of the year, at the very least. If **Part 2**, expected in the U.S. sometime in October, lives up to the quality of Part 1, that rave may be extended to the decade! This is a book that you'll want to own if you collect ANY Australian marine gastropods! It is as much a must in any collector's library as is the **Compendium of Seashells**.

STOP PRESS: We just received an advance copy of **Part 2**. YES! It's all that was promised and more! Wait til you see the color photo of the cone shell with radular cannon primed and ready to shoot!

— L.S.



CARIBBEAN CONIDAE PART III

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NORTH AMERICAN FRESHWATER MUSSELS

(continued from page 11)

USEFUL LITERATURE:

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 Cummings, K.S. & C.A. Mayer. 1922. *Field Guide to Freshwater Mussels of the Midwest*. Illinois Natural History Survey, Manual 5. 194 pp.
 Oesch, R.D. 1984. *Missouri Naiades*. Missouri Department of Conservation, Jefferson City. 270 pp.
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 Watters, G.T. 1994. *An Annotated Bibliography of the Unionacea (Primarily of North America)*. Ohio Biological Survey Miscellaneous Contributions (1). 165 pp.

Leiopyrga lineolaris (Gould, 1861)



Whorls almost flat-sided but rather sharply carinate at the anterior periphery so that the spire is distinctly reversely turreted, body whorl broad; glossy smooth except for a few spiral striae on the base. Cream, rose or tan, with zigzag brown lines and a row of spots below the suture and sometimes around the periphery. See also diagram on p. 91.

9 mm high; 5 mm wide. NSW to eastern Vic. Synonym: *picturata* H. & A. Adams, 1863.

Leiopyrga octona (Tate, 1891)



Whorls slightly convex, only very weakly peripherally carinate; sculpture of eight equidistant, smooth spiral ribs on the sides of the whorls, seven or eight on the base. White with oblique pink or brown lines which may coalesce on the lower parts of the whorls into a reticulate pattern.

12 mm high; 5 mm wide. Southern NSW to Cape Leeuwin, WA. The subspecies *B. octona problematica* (Iredale, 1924) described from Twofold Bay, NSW has a brown spiral band beside the umbilicus. Further study is needed to determine whether the NSW form is consistently different from the southern population.

TRIBE **MONILEINI**

Shells conical to lenticular, umbilicate. The left neck lobe is modified into a particle exclusion filter by subdivision of the margin into a series of muscular, tentacular processes.

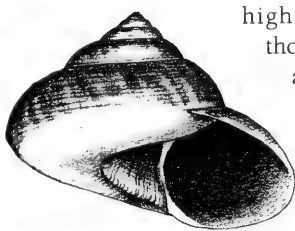
▲ GENUS **ARCHIMINOLIA** Iredale, 1929

Monilea oleacea Hedley & Petterd

With characters of the type species.

Eastern Australia. Monotypic.

Archiminolia oleacea (Hedley & Petterd, 1907)



Turbinate, thin-shelled, with moderately high spire and rounded whorls, though the base is rather flattened and there is a narrow flat step below the suture; periphery weakly carinate; columella simple, funicle narrow and weakly nodulose; sculpture of incised spiral lines which

become deep and prominent at the centre of the whorls, shoulders and base smoother; umbilicus deeply perspective, its walls spirally striate, funicle a thin, weakly nodular marginal rib. Fawn with slightly darker oblique-axial lines on the sides.

1.6 cm high; 1.2 cm wide. NSW to SA. Dredged in deep water; the type came from 456 m off Sydney.

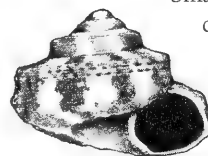
▲ GENUS **CONOTALOPIA** Iredale, 1929

Monilea henniana Melville

Turbinate, spirally ribbed, carinate; umbilicus wide and funnel-shaped, bordered by a nodulose funicle; columella arched, simple, meeting the parietal wall at a steep angle.

Eastern Australia. Iredale introduced this generic name with *henniana* as the type species but included *tropicalis* provisionally. Both species seem close to *Minolia*.

Conotalopia henniana (Melvill, 1891)

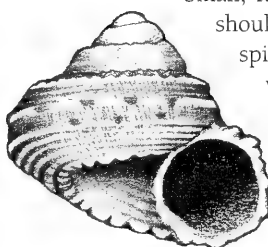


Small, whorls prominently and sharply bicarinate, with a wide, nearly horizontal zone above the shoulders and nearly vertical, concave sides; base convex; umbilicus with a wide funnel-shaped entrance, bordered by a weakly nodulose spiral rib, cancellate within;

external surface corded. Flat upper zone fawn, sides and base fawn, with wide axial rays and small brown spots on the ribs.

2 mm high; 4 mm wide. Qld.

Conotalopia tropicalis (Hedley, 1907)



Small, rather thin, whorls angulate at the shoulder, centre and base; three strong spiral ribs encircle the centre of the whorls, with wide spaces between; the flat subsutural shelf is crossed by radial plicae; four small spiral ribs on the base plus a strong nodulose funicle bordering the wide umbilicus; the whole surface covered with

fine axial threads. Grey, pinkish on the body whorl, with scattered crimson dots on the larger ribs.

3.15 mm high; 3.75 mm wide. Described from Mast Head I., Capricorn Group, Qld.

▲ GENUS **ETHALIA** Adams & Adams, 1854

Rotella guamensis Quoy & Gaimard

Suture distinct; callus plug reflected over but not entirely closing the umbilicus.

Indo-West Pacific. Synonym: *Liotrochus* Fischer, 1879.

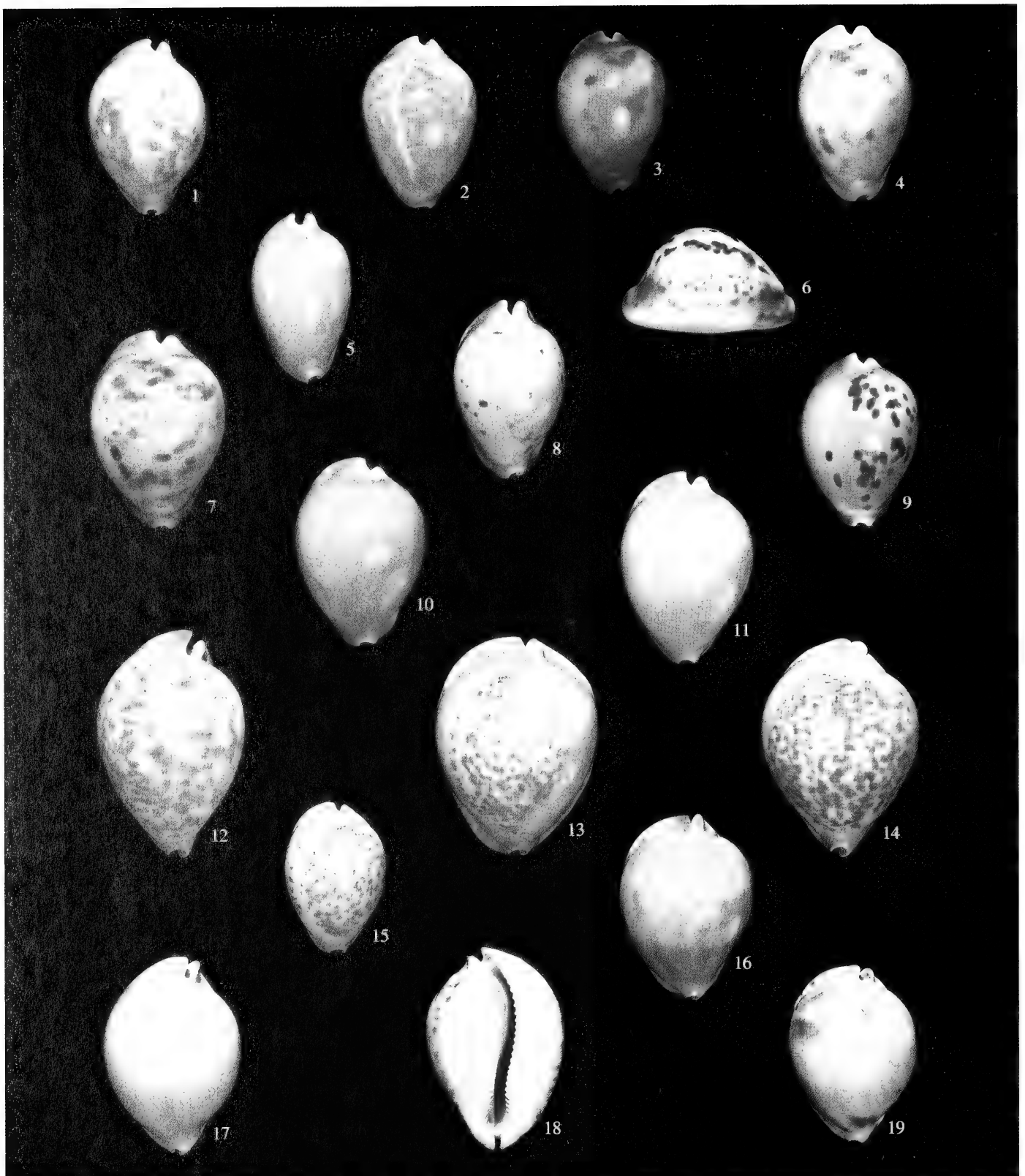


Plate 27 CYPRAEIDAE *Cypraea* (*Zoila*) *venusta* and *Cypraea* (*Zoila*) *friendii* complexes — pale forms (from *Australian Marine Shells*)

1. *Cypraea* (*Zoila*) *venusta* off Beagle Is., WA; 160 m. 2. *Cypraea* (*Zoila*) *venusta* off Abrolhos Is., WA. 3. *Cypraea* (*Zoila*) *venusta* Hopetoun, WA; 25 m. 4. *Cypraea* (*Zoila*) *venusta* Cervantes, WA; 18 m. 5. *Cypraea* (*Zoila*) *venusta* off Mandurah WA; 12 m. 6. *Cypraea* (*Zoila*) *venusta* Draper Is., WA; 57 m. 7. *Cypraea* (*Zoila*) *venusta* Bremer Bay, WA; 30 m. 8. *Cypraea* (*Zoila*) *venusta* Esperance, WA; 35 m. 9. *Cypraea* (*Zoila*) *venusta* Recherche Arch., WA. 10. and 11. *Cypraea* (*Zoila*) *venusta* Esperance, WA. 12. *Cypraea* (*Zoila*) *friendii* *jeaniana* North West Shelf edge, off Onslow ("aurata" form). 13. and 14. *Cypraea* (*Zoila*) *friendii* *jeaniana* west of Point Maud, WA; 110 m ("aurata" form). 15. *Cypraea* (*Zoila*) *friendii* *jeaniana* trawler operating from Broome, WA ("aurata" form). 16. *Cypraea* (*Zoila*) *friendii* *vercoi* King George Sound, WA; 28 m (intermediate form). 17. *Cypraea* (*Zoila*) *friendii* *vercoi* east of Esperance, WA; outer shelf ("contraria" form). 18. *Cypraea* (*Zoila*) *friendii* *vercoi* 50 miles east of Esperance, WA; 145-180 m ("contraria" form). 19. *Cypraea* (*Zoila*) *friendii* *vercoi* off Eucla, WA; trawled outer shelf ("contraria" form).

DOLICHOLATIRUS CELINAMARUMAI KOSUGE, 1981, A LITTLE-KNOWN FASCIOLARIID

by Gene Everson

One day in April 1980, on a diving/collecting trip in the Philippines aboard Carfel's (Carlos and Fely Leobrera) 50' yacht, the M/Y Monetta, we were discussing a study that determined the best bait to use for mollusks. The winner was...chicken bones! And that is exactly what we tied to a tangle net in Cocos Island, Costa Rica four years later to capture the first live *Phyllonotus eversoni* D'Attilio, Myers & Shasky, 1987. But back to the P.I.

One afternoon we anchored in 35' on a sand bottom at Apo Reef in the Mindoro Strait. After dark, I submerged to check out the shelling. As there was no current, the first thing I noticed, to my disgust, was paper plates and other garbage from our evening meal, including chicken bones! I didn't remember having chicken for supper until then. Directly under the boat, sand trails were everywhere.

In about two minutes I picked up a *Dolicholatirus* and a couple of other sand-dwelling species, and then I pushed off the bottom with one hand to swim up and tell the others that this was THE spot. As I pushed off, I felt something, grabbed it, and when I looked I found that it was a terebra that I hadn't seen. The rest of the collectors soon arrived and I swam away to undisturbed habitats. I got good bottom time, and by the time I returned, everyone else had surfaced. This is when I became a believer in chicken bones, because, after all the concentrated collecting under the boat, this was still the most productive spot, with shells

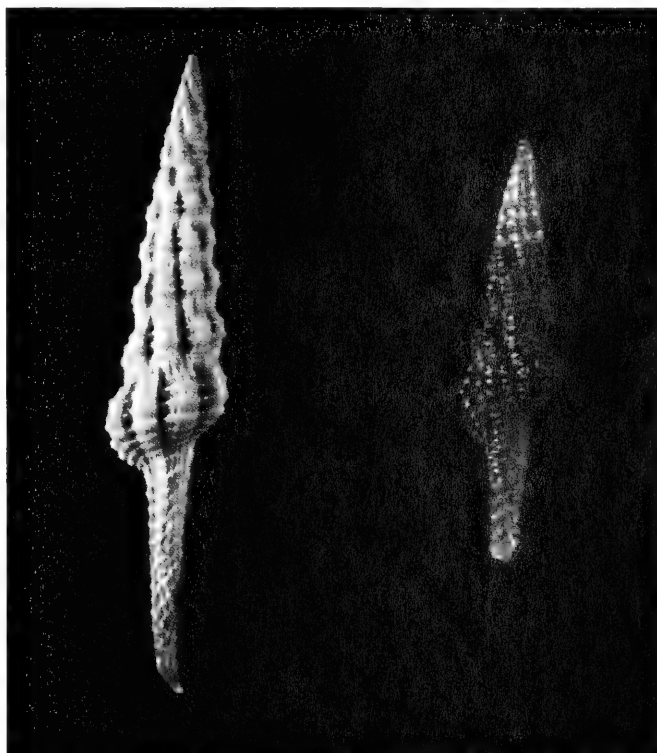
continuing to surface and push trails through the sand.

The *Dolicholatirus* was identified as *D. lancea* (Gmelin, 1791) but I was never 100% convinced. All of the *D. lancea* that I had actually seen, in life or in illustrations, were solid black; my specimen was pinkish gray with some narrow black axial markings.

Recently, fourteen years later, while looking through reprints and looseleaf odds and ends for another reference, I spotted the original description illustrations of *D. celinamarumai* Kosuge, 1981 in the **Bulletin of the Institute**

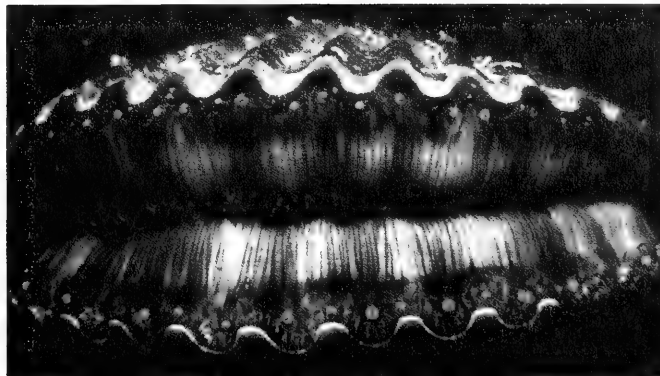
of Malacology, Tokyo, Vol. 1, no. 6, July 31, 1981. I recognized this species as my shell immediately because, as Kosuge states, "The present new species is easily distinguished in its sculpture, coloration, and shell shape, much developed axial varices, and color pattern." The holotype measures 28.6mm, my self-collected specimen is 38mm, and I had another 16 inch juvenile received in trade from Fely Leobrera. It is now residing on Sanibel Island awaiting the completion of the Bailey-Matthews Museum, its new home.

I feel that this species deserves some publicity since the **Bulletin of the Institute of Malacology, Tokyo** is little known among collectors, and some more of us may have this species in our collections, misidentified. I know of no popular books with *D. celinamarumai* illustrated (correctly); however, the **Compendium of Seashells** has an excellent color picture of it on page 183, identified as *D. lancea*.



Left: *Dolicholatirus celinamarumai* 38mm, Apo Reef. Right *Dolicholatirus lancea*, 26mm, Malaita, Solomons (small specimen pictured to show spire definition which is always eroded in the larger ones).

500 Nottingham Parkway, Louisville, KY 40222



A study in contrasts. Steve Barry's portrait photos of *Argopecten irradians*, taken in 20' at Green Bridge, Newport, Rhode Island with a Nikonos V w/1.2 mac, using Fujichrome 50 film.

SPLITTERS AND LUMPERS

(Continued from page 2)

only be forms or synonyms of *Conus magus*! A dealer who wants to sell has no choice. He cannot disappoint his customers who are constantly waiting for "new species." A lumper-dealer is a contradiction of terms.

The splitter army is not recruited only among collectors and dealers. Other sympathizers join up: proud amateurs, and, at times, scientists who want to be known as authors of new descriptions for posterity's sake. Their interest lies also in constantly producing new species, as easy to do as it is to satisfy the requirements for separating species.

There is an indisputable fact. Splitters are far more numerous, and it could not be otherwise, since they are the ones who set the tone of all publications for collectors.

And where are the lumpers recruited? They can only be people who are not traditional collectors, who do not deal in shells, and who have no desire to describe new species. Lumpers are either research workers who do not need to amass new descriptions for their reputations, or collectors who have passed the stage of youth's enthusiasm and who know that Conchology is something other than Philately. A Cone collection is never "complete." Its value, which cannot be measured by the number of species amassed, nor the catalog value, but certainly much more by the truth and reliability of the data on the label, is also increased by containing the greatest possible number of geographical forms, be they qualified as species, subspecies or forms by taxonomists.

I, myself, have left the ranks of the splitters to become a horrible lumper in the eyes of my friends (who, despite this change of mine have remained friends), and I believe this is normal for a man who, for several decades, has immersed himself in collecting, deepening his knowledge along the way. There are, however, examples to the contrary.

There are men of good intention who believe that this contradiction can be defined by a dialectical wording according to a Hegel-type formulation: thesis, antithesis, synthesis. In other words, these people believe that the truth must lie in the middle, far from the principles of zoological systematics. They would make objective decisions without prejudice, and without the slanted viewpoint of the lumper or the splitter.

This would be nice, but things, unfortunately, do not happen so. Most readers can define a species; species are groups of populations which reproduce among themselves, and are, with regard to propagation, isolated from seemingly identical groups. From this one can deduce that two populations living side by side are two different species when hybrid populations do not exist. One obvious example is that of *Conus marmoreus* and *Conus bandanus* which live in sympatry in innumerable places in the Pacific zone — in different habitats, but within short distances and without intermediate forms being known. If *Conus marmoreus* was known only from the Pacific, and *Conus bandanus* only from the Indian Ocean, then the small differences between the two taxa would motivate one to create two subspecies of one species.

Such a situation is infrequent. Most populations in question live rather far apart, even in different habitats. Are they then the same species? Biologically speaking, it doesn't matter how far apart their habitats are. If, when they do live together, the possibility of interbreeding can be presumed through such factors as morphometry, radula, habitat, etc., this presumption is still never more than an unproven hypothesis. However, when intermediate forms can be found along a large coastal range, going from form A to form B, this becomes a new factor tending to prove that form A and form B belong to the same species. It is in this way, in the Philippines, that transitions from the typical *Conus magus* to

Conus raphanus are found, and between the Indian Ocean and Pacific forms of *Conus arenatus*, and in the Sulu Sea, intermediate forms between *Conus bandanus* and *Conus vidua*. Unfortunately, such transitions are rare, and morphological differences of doubtful significance are more frequent. As examples, the shell becomes wider (*Conus thailandis* versus *Conus crocatus*); the color changes (*Conus rubropennatus* versus *Conus pennaceus*); or the sculpture is modified (*Conus pseudocedonulli* or *blainvillei* versus *Conus ammiralis*). The question of the importance of the differences in allowing one to decide whether local forms can be considered valid species is a question without an answer! It is here that the splitters and the lumpers enter the ring.

He who wants to describe a local form (lumper) or a valid species (splitter) must realize that he cannot prove anything, even knowing that it is hard, or even impossible for anyone to contradict him (especially so when the knowledge of the animal, its sexual organs, atypical sexual behavior, and ecological preferences is very poor).

Thus can anyone to his own satisfaction decide, in questionable cases, whether to be pro-splitting or pro-lumping? I doubt it, and refer to the preamble of the ICZN: "The object of the Code is to bring stability and universality to the scientific names of animals, so that every taxon is unique and distinct." Neither splitting nor lumping is codified, but one must take into account the principles which guide the code of zoological science to guarantee both the stability and the universality of scientific names of animals, not only in HOW new names are described, but also WHETHER or NOT they should be described.

Without a doubt, for stability and universality, it is preferable to have a lesser number of names than to have too many. It is only in this way that we can have an overall view of taxonomic units. Otherwise we end up with the confusion which has long existed in the Conidae as a consequence of the madness to describe new species. If in doubt, "lump" — otherwise, "split"!

It is not hard to imagine, in the case of cones, that the fraternal enemies, lumping and splitting, also reveal themselves in the "whether or not" and the "how" of the organization of species and subspecies. Many authors recognize only one genus, *Conus*; others distinguish innumerable genera and subgenera. Is this not just splitting and lumping at a higher level?

One can see things this way, but I feel that the situation may vary. When one defines a genus, as does Mayr, as a "taxonomic category which contains a group of monophyletic species and which is separated from other genera by a clear gap," one must conclude that such a generic system can hardly be applied to many species of cones, above all because we have no knowledge whatsoever of the common ancestors of such-and-such species. For some groups of species, one can naturally focus on morphological similarities. For instance, *Conus betulinus* and *Conus figulinus* belong to the same group, as do the small species of Cape Verde. This is also the case for *Conus geographus*, *Conus obscurus*, *Conus eldredi* and *Conus tulipa*, and many others. However, for just as many examples it is impossible to draw conclusions from the respective peculiarities of the shell and animal to allow their placement in this group or that.

So far, failure has been the result of all attempts to define a system of genera linked to morphological characteristics and encompassing all species of cones. If we focus on shape, we end up with absurd results, like the tiny *Conus rutilus* belonging to the same group as *Conus teramachii* or *Conus cedonulli*, when all other evidence separates them. Also, the borders between genera become dilute with the variety of forms of the species: *Conus*

magus gets put in a genus that doesn't contain *Conus raphanus*, or *Conus consors* in a different genus than that which contains the form *poehlianus*. Many authors have adopted the sculpture — coronate or not — as a criterion to distinguish species — without conclusive results. Following this system, the typical smooth *Conus ammiralis* would have to be included in a genus other than that for the crowned form from the Indian Ocean. Perhaps two species, but never two genera!

Nobody knows at the present time what shell and animal characteristics can establish generic relationships. Shape, size, sculpture, coloration, radula? Nobody knows!

I, therefore, do not see any alternate solution to following the example of leading scientists (Coomans, Moolenbeek, Kohn, Richard, Petuch, Korn, Walls, etc.) in admitting that a closed generic system is not foreseeable for the Conidae.

We cannot rely on the justifiable needs of collectors who are best served by a system founded on an abundance of forms. It is futile to use similarities to define groups without satisfying scientific criteria. Even a simple attempt to regroup according to appearance — as in the dividing of all cones into three broad

categories — is bound to fail. Weinkauff recognized this when, in 1874, he wrote: "I affirm that I have carried out this grouping only as an artifice which leaves much to be desired as far as being satisfactory. There are many species which are opposed to any grouping and an even greater number which have characteristics which are so vague that they could be included in a second grouping, a third or even a fourth."

You can use any criteria you want. As long as the progress of our knowledge is as minimal as it is, we will not be able to classify the Conidae in a satisfactory and well-defined system of genera. There will always be species opposed to clear definition. We, mainly the collectors, should not get excited over this state of affairs, but we should, instead, be struck with admiration for what nature can create — the production, from a simple geometric form, the cone, of a thousand different shapes. In fact, the number is not a thousand but, indeed, infinite, since each shell distinguishes itself genetically from all the others, and every one is morphologically unique. We will never succeed in reducing nature to a scheme, like a set of postage stamps.

WANDERING WENTLETRAPS

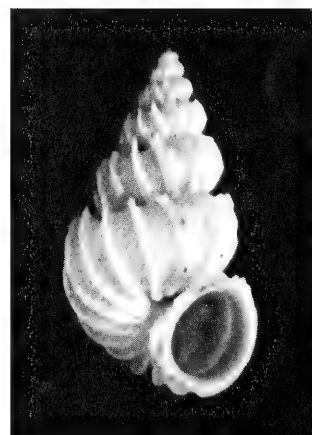
by Norman Paschall

In 1986 Philippe Bouchet of the Museum of Natural History in Paris, France published a beautiful revision of the northeast Atlantic Epitoniidae which greatly affects our study of this family. As he therein indicates, a lovely specimen was described as *Epitonium celesti* by Aradas in 1853 with a fossil form identified as *Epitonium frondosa* by Sowerby in 1827. At that time he also indicates that *Scalaria pourtalesii* Verrill & Smith, 1880 is an American synonym, named from the population found along our eastern coast.

During the July 1988 COA Convention at Fort Myers, Florida, Dr. E. Rios of Brazil presented me with an *Epitonium* specimen for identification which had been collected by fishermen at Albardao, Rio Grande do Sul, Brazil. After study by Dr. Abbott, Dr. Rios and myself and reference to Bouchet's publication, we determined this specimen to be *Epitonium (Aspersiscala) celesti* Aradas, 1854. Thus we can extend the range to Brazil and the south Atlantic. Bouchet's remark that the synonymy of the American *E. pourtalesii* with *E. celesti* was established by Monterosato in 1890 is hereby confirmed.

Over the past 15 years, I have studied and measured some eight specimens of *E. celesti* from the following locales: Capraia Island, Tuscany, Italy; "the Mediterranean Sea," in the Sydney Museum in Australia; Barcelona, Spain, dredged live in 90 meters; San Carlos de la Rapita, Tarragona, Spain in 300 meters; the Alboran Sea (Spain) in 500-600 fathoms, and a specimen from the Florida State Museum (FSM 54338) labelled as *E. pulchellum*.

My study data of *E. (Aspersiscala) pourtalesii* (Verrill & Smith, 1880) indicates that I have examined 5 specimens dredged from the Gulf of Mexico (dredge material from McGinty) from (?) Freeport, Texas; Atlantic City, New Jersey; Anna Maria Island, Florida; Marcos Island, Florida; Barbados Island; and Hilton Head, South Carolina. It would seem that this long lost species is now properly identified and, with Dr. Rios' finding from Brazil, its range has been extended into the western Atlantic, and down into Brazil.



Epitonium (Aspersiscala) celesti (Aradas, 1853)



Epitonium (Aspersiscala) pourtalesii (Verrill & Smith, 1880)

WHAT IS A VALID SPECIES?

(Continued from page 2)

factors. That all this is entirely a matter of personal observations and conclusions AND NOTHING MORE, has not been fully grasped even by some of the malacologists themselves.

We compare animals to see which are alike, in order to group them, and which are different, in order to distinguish them. Actually there has been no great change in the practice of classification in recent years, in spite of some statements to the contrary. There is no prospect of immediate change and no reason why one should expect it. Animals continue to be classified almost entirely by comparing their attributes. Whereas a few years ago the generally available data were structural, today's taxonomists frequently use what they know of the physiology, ecology, cytology and ethology of the animal studied as well. If (as in most molluscan families and in particular the Conidae), a species cannot be unequivocally established as valid in the biological sense, then systematics, having progressively expanded its scope of new parameters, now has considerably more circumstantial evidence from which to infer greatest probability in order to establish its status of validity and that is as far as it can go. Since the biological status may remain unproven, and inference is still an intelligent guess, the reader must decide whether the analysis by a taxonomist of the available data is logical and makes good sense. One should avoid being unduly influenced by critical and contrary opinions which are often irresponsibly expressed without substantiation of any kind. It really is left to the reader to decide whether the judgment of the taxonomist can be trusted.

If the validity of a species must per force contain some element of uncertainty as to its status, how then should the secondary problem of a valid subspecies be dealt with? Of the various definitions of a "subspecies," the most generally recognized one by conchologists is: "they are an 'incipient' species, or at least populations that are nearing specific status. It is certainly theoretically possible for a subspecies to become isolated and evolve into a distinct species," according to Blackwelder. However, when species populations are equated to gene pools, whose integrity must be fully maintained to preserve conspecificity in order to interbreed, subspecies, in fact, cannot hold a biological status of any kind. It is possible to consider subspecies as pseudotaxa. A taxon is a classification unit of any rank, but it is also a group of individuals. If the group cannot be circumscribed, at least in practice, it can scarcely be classified. It is doubtful if subspecies are ever classified in the same manner as species. They are populations recognized within the species, not groups of individuals assembled to produce a taxon. They are thus not classified and, therefore, not taxa.

Nevertheless, for taxonomic convenience, a subspecies can be a useful tool to describe a race, tribe or colony. It should not, however, be deliberately misused to substitute for the category of genus for the purpose of grouping sibling species. For example, conchologists persist in regarding *Conus* (*Eugeniconus*) *victor*, *C. marchionatus*, *C. cordigera*, *C. skinneri*, *C. bitleri* as subspecies cf. *C. nobilis*; this is because they can see the very apparent similarity of the main morphological aspects of each different population to the others, showing that they represent a complex of closely related species. However, what is just as apparent, but ignored, is that all available evidence actually combines to conclude that these six allopatric sibling populations have been isolated long enough to have genetically evolved into gene pools of their own. They are always homogeneous in their overall individual morphology, without the intrusion of any of the other five into their

midst. Each has its own coloration and distinct patterning, with *C. victor* and *C. skinneri* adding to their ornamentation rows of moniliform bands; *victor's* is composed of dark brown, detached cuneiform-like characters, very close but not linked together, whereas *skinneri's* resembles tessellated ribbons of chocolate-and-white mosaic without interruption. The average population size of adults of each population is, again, consistently different in each case, helping to reinforce the other more substantive evidence. A look at the oceanic floor chart of the type localities reveals a maze of deep trenches, very likely to cause currents to criss-cross at different sea levels within the comparatively narrow waterways separating individual habitats, which could constitute one of the barriers to impede effective overlapping. Probably what is not even known to some shell collectors is that ocean currents, for many reasons (too long to go into details here), are not capable of transporting most shells any distance, and the only process of range extension is the random drifting period of pelagic larvae. The distribution of many conid species is therefore completely dependent on the duration of the veliger's floating stage and where it might settle down. Both aspects are entirely unpredictable, as is to be expected.

Recently, additional evidence has been obtained from the discovery of a seventh sibling population in Sri Lanka, since named *C. friedae*. This new population compares in size with the larger *C. skinneri* in shape and color but lacks the moniliform bands. There is on record yet another occurrence of an eighth population found in the Andaman Is. which has the yellow maculations and size of *C. nobilis* but is visibly narrower in its elongate body whorl. How could these new populations have arisen except to assume that, at some time or other, random pelagic larvae had fortuitously settled down in new areas ecologically compatible with starting a new colony and, because they remained isolated from further intrusions long enough, they evolved into a separate distinct species unlikely to interbreed with any further accidental intrusions of the earlier original strain?

Therefore, a complex of such a nature deserves and should properly be placed in a new generic category of its own, hence Subgenus *Eugeniconus*.

Another fallacy among conchologists is the indiscriminate lumping of different sibling species as synonyms. Here, an example to cite is the grouping of *Dendroconus* (*Tesselliconus*) *crassus* and *D. polyglotta* as synonyms of *D. eburneus*, which is a very common species with an extremely extensive range throughout the Indo-Pacific region and having a familiar set of changing color variations.

This is certainly not the case with *C. crassus*, which is consistently only colored by bright reddish-brown or orange spots, and never seen in the black dots and yellow bands particular to *eburneus*, and, in addition, having its own range limited to a narrow belt from Fiji to New Britain Is. Nor is it the case for *C. polyglotta*, which is endemic to Pelew Is., Philippines, but has a remarkable variety of complicated patterns of markings which are entirely unique and easily distinguishable from those of *eburneus*. Neither are sympatric with *eburneus* in either of the two localities mentioned. Is it logical to assume that the two isolated populations are merely color variants of another, just because they are similarly shaped, especially when neither has ever been found as one of the color forms within and of the widely distributed *eburneus* communities anywhere?

I now cite some examples to demonstrate how subspecies can be usefully applied only for taxonomic purposes. One is

the common species *Cylindrus textile*. It would be difficult to imagine that constant overlapping is not continuously taking place within the myriad colonies of this ubiquitous species. This should enable the integrity of its gene pool to be preserved and to overcome evolutionary changes arising from isolation, although there could still be exceptions in remote areas such as Mauritius and Madagascar. Nevertheless, there are some geographical communities which have evolved unique features of their own and should be separated. I named *Cylindrus textile neovicarius* from Arabian waters and *C. t. dahlakensis* from the Red Sea for their somewhat different structural shapes only seen in these two localities. However, the presence of shells of the traditional shape is also seen within these areas; hence there is insufficient justification to assume these geographical populations are less likely to overlap and incapable of interbreeding with each other.

Examining some of the new taxa Petuch has periodically proposed, it simply is not possible to establish the validity of a whole population based on single specimens, as had been done. *Conasprella gibsonsmithorum* could provisionally be classified as a subspecies of *C. sennottorum*, and *Profundiconus (Fusiconus) pacei*, as a subspecies of *P. macgintyi*. At least it would yield some taxonomic benefit to mark a range extension of existing populations, and could always be emended if the actual population to which it belongs is uncovered and found to be a separate, valid one.

Perhaps a clearer example or two, unrelated to molluscs, could provide a better understanding of the subspecific definition. There are two kinds of elephants in the Family Elephantidae which are different enough to be placed within two separate genera. The African variety is larger with palm-like ears, is named *Loxodonta africana*, and ranges throughout the savannas of east, central and south Africa; but another, because of its preference for forests as feeding grounds, is named as a subspecies *L. a. cyclotis*. The Asian variety *Elephas maximus* from Sri Lanka is its designated type species. Those found in Malaysia are *E. m. hirsutus*; in Sumatra, *E. m. sumatrana*; and in India, *E. m. bengalensis*. Since the same elephant occurs in Thailand and Cambodia as well, it is open for any taxonomist to name a new subspecies. Morphologically, it is impossible to tell each subspecies apart, but there is little doubt they would interbreed, especially as the ecological conditions in the sub-tropical habitats do not vary to any great extent.

One last example should leave no further doubt as to the meaning and relevance to taxonomy of the definition of subspecies; that of mankind itself. We belong in Family Hominidae, one of six families of higher primates in the Suborder Anthropea. We are described as a single species in a single genus. Monkeys form the largest group of the six in Family Cercopitheidae with 82 species in 14 genera, a group with extreme morphological variability, but, because species were able to be proven valid individually, it was possible to separate them into monotypic populations, without any subspecies. *Homo sapiens* alone is polytypic, but notwithstanding the clearly visible differences in the composition of human populations, the evidence is that our gene pool is a single one in its entirety, and it has been impossible to find any formal basis for separating the superficial differences except on a geographical basis, such as American Indian, Polynesian, Micronesian, Melanesian, Australoid, Asiatic (Mongoloid), Indic, European (Caucasoid), African (Negroid).

Gould in 1985 explained that: "We recognize only one formal category for division within species — the subspecies. Races, if formally defined, are therefore subspecies. Subspecies are populations inhabiting a definite geographical subsection of a species' range and sufficiently distinct in any set of traits for taxonomic recognition. Subspecies differ from all other levels of the taxonomic hierarchy in two crucial ways. First, they are categories of convenience only and need never be designated. Each organism must belong to a species, a genus, a family and to all higher levels of the hierarchy; but a species need not be formally divided. Subspecies represent a taxonomist's personal decision about the best way to report geographical variation. Second, the subspecies of any species cannot be distinct and discrete. Since all belong to a single species, their members can, by definition, interbreed. Modern quantitative methods have permitted taxonomists to describe more precisely in numerical terms. We no longer need to construct names to describe the differences that we see, by definition fleeting and changeable. Therefore, the practice of naming subspecies has largely fallen into disfavor, and few taxonomists use the category any more. Human variation exists; the formal designation of races is "passé."

To summarize: (A) a species is valid taxonomically when it conforms fully with ICZN current rules; (B) it is a valid species biologically when it is a unit of population, whose capability to reproduce its own kind can be unequivocally proven; (C) in the absence of tangible proof, a species can then only be assumed to be a valid species from inference of highest probability of the circumstantial evidence available; and (D) a subspecies is not a category and is only a descriptive term of taxonomic convenience.

EAST COAST SHELLING

(Continued from page 4)

tropical families. We visited one quarry near Hampton, Virginia repeatedly while we were living in North Carolina, and found new and amazing stuff at each visit. Also, the Eastern Oyster, *Crassostrea virginica*, is very plentiful in Maryland and Virginia, and in areas like Chincoteague and Assateague Islands you can find the large forms of the two oyster drills, *Urosalpinx cinerea follyensis*, and *Eupleura caudata etterae*. I presume they get that big in part from their abundant food supply.

New Jersey is really not that bad either, at least from a sheller's perspective. I spent a summer on the shore of Delaware Bay, in Cape May Courthouse, and regular beachcombing turned up lots of interesting species on the flats, while in the beach drift I was able to find lots of *Epitonium rupicola*. I wondered where the live ones were, but then in August they suddenly began showing up live on the flats, perhaps to breed. Unfortunately, I did not get to stay late enough in the season to look for evidence of eggs or juveniles. New York has a similar diversity of species and habitats, and once you go further out on Long Island you find rocky areas with *Nucella lapillus* and *Acmaea testudinalis*, both reaching the southern limit of their distribution.

So I don't really mean to put down the mid-Atlantic states — they have their charms; it is just an indisputable fact that I can find the same shells, and more, elsewhere. SO now I find myself collecting locally a little bit less, and dreaming about trips to other localities more and more.

BOOK REVIEWS

VOLUTES by Guido T. Poppe and Yoshihiro Goto.

Ever since publication of Weaver-duPont's *The Living Volutes* in 1970, a flood of discoveries and corresponding descriptions in the family Volutidae have practically demanded a summing up of old and new knowledge of that gastropod family. G.T. Poppe of Belgium and Y. Goto, of Japan took on this task. The result of their work is the monograph, *Volutes*, published by Mostra Mondiale Malacologia, Cupra Marittima (AT — Italy).

A clear bibliography presents almost every new publication, description, and finding concerning volutes since 1970; these developments are discussed in the main part of the book. To determine which of the many taxonomic views should be considered valid, they compare in tables the ideas of several well-known, reputable volute experts. The authors' new taxonomic system was established by considering all these possibilities without making any final decision.

Changes made by the authors indicating disagreement among scientists and experts will have to be discussed in the future and are left open for the individual to decide. Detailed treatment of these decisions definitely lies beyond the scope of the book. A precise interpretation of the polymorphology of volutes down to the last logical taxonomic step must wait for more extensive knowledge of the family than we have at our disposal now.

Thus the methodical review of the Volutidae exactly represents the current level of knowledge of that family. Considering the controversial nature of the subject itself —determining

the validity of approximately 260 species, including a great number of new discoveries and corresponding descriptions — the book will hardly find unanimous approval among scientists, experts and collectors. Different views and interpretations have always advanced the study of volutes, and they will continue to do so in the future. The same applies to the authors: their praiseworthy intention of finding a single final decision might be only one of many steps in the right direction. Present opinion among experts must be considered still too divergent to be established on a single level.

Volutes is published in hard cover in English, and presents a wide range of scientific views. Good color photos of almost all recent species, including some variants, in dorsal and ventral view, make up the main part of this book. A detailed description of each species is accompanied by a distribution map showing present knowledge; different experiences and new distribution information should be brought to the authors' attention. Printed corrections will be distributed at a later date.

In sum, *Volutes* is a clearly presented, successful monograph — open to any further taxonomic discussion. Some minor confusion in the color photo section needs to be corrected soon; it does not, however, diminish the general excellence of this book. *Volutes* will soon become an indispensable part of any shell collection, and of most malacological libraries. The price of the volume is in line with the international standard.

—H. Douté

ANSWERS TO A SEASIDE MEDICAL CENTER

by Dean Weber

Dean sends along these answers to his little puzzle from the June *American Conchologist* (p. 22), noting that they are from the 1983 *Compendium of Seashells*; he says that if any of them have been changed in the last eleven years or so, he is most unlikely to have heard about it. How many of you got them all?

Burned Nassa — *Nassarius crematus* (Hinds, 1844)
 Singed Peristernia — *Peristernia ustulata* (Reeve, 1847)
 Black Olive — *Oliva vidua* (Röding, 1798)
 Burnt Spindle — *Fusinus ambustus* (Gould, 1853)
 Measled Cowry — *Cypraea zebra* Linné, 1758
 Measle-Mouth Cantharus — *Cantharus sanguinolentus* (Duclos, 1833)
 Depressed Ancilla — *Amalda depressa* (Sowerby, 1859)
 Troubled Miter — *Mitra aerumnosa* Melvill, 1888
 Unstable Limpet — *Collisella instabilis* (Gould, 1846)
 Bent-Nose Macoma — *Macoma nasuta* (Conrad, 1837)
 Short-Snouted Callista — *Callista brevisiphonata* (Carpenter, 1865)
 Humped Strombina — *Strombina dorsata* (Sowerby, 1832)
 Gangrenous Cowry — *Cypraea gangranosa* Dillwyn, 1817
 Saddened Turrid — *Compsodrillia tristicha* (Dall, 1889)
 Lumpy Morum — *Morum tuberculosum* (Reeve, 1842)
 Bleeding Latirus — *Latirus sanguifluus* (Reeve, 1847)
 Blotchy Ancilla — *Agaronia nebulosa* (Lamarck, 1811)
 Blotchy Strombina — *Strombina maculosa* (Sowerby, 1832)

Pimpled Nassa — *Nassarius papillosus* (Linné, 1758)
 Hooked Mussel — *Ischadium recurvum* (Rafinesque, 1820)
 Weeping Murex — *Pteropurpura plorator* (Adams & Reeve, 1849)
 Spineless Tudicula — *Tudicula inermis* Angas, 1878
 Spineless Dwarf Triton — *Ocenebra inermicosta* E. Vokes, 1964
 Three-Spined Cavoline — *Diacria trispinosa* (Blainville, 1821)
 Tumor Cockle — *Lunulicardia tumorifera* (Lamarck, 1819)
 Arthritic Spider Conch — *Lambis chiragra arthritica* Röding, 1798
 Sunburnt Cone — *Conus cinereus* Hwass, 1792
 Flattened Tivela — *Tivela planulata* (Broderip & Sowerby, 1830)
 Flattened Stomatella — *Stomatella planulata* Lamarck, 1816
 Wounded Pitar Venus — *Pitar vulneratus* (Broderip, 1835)

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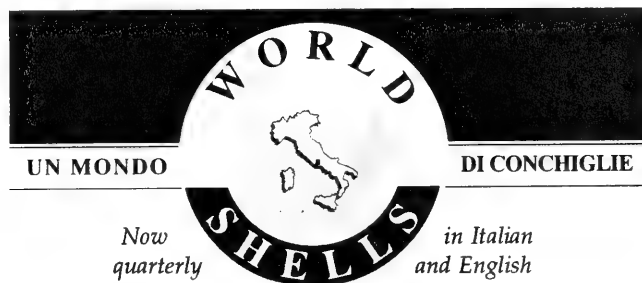
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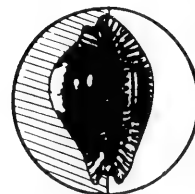
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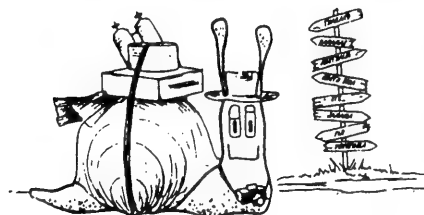
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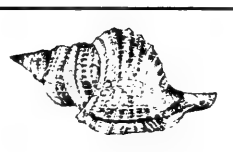


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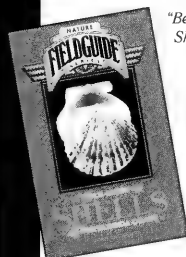


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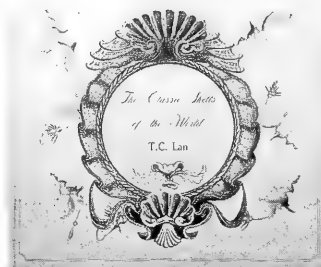


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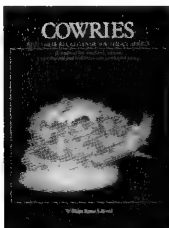
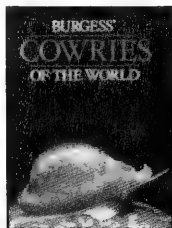
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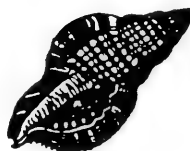
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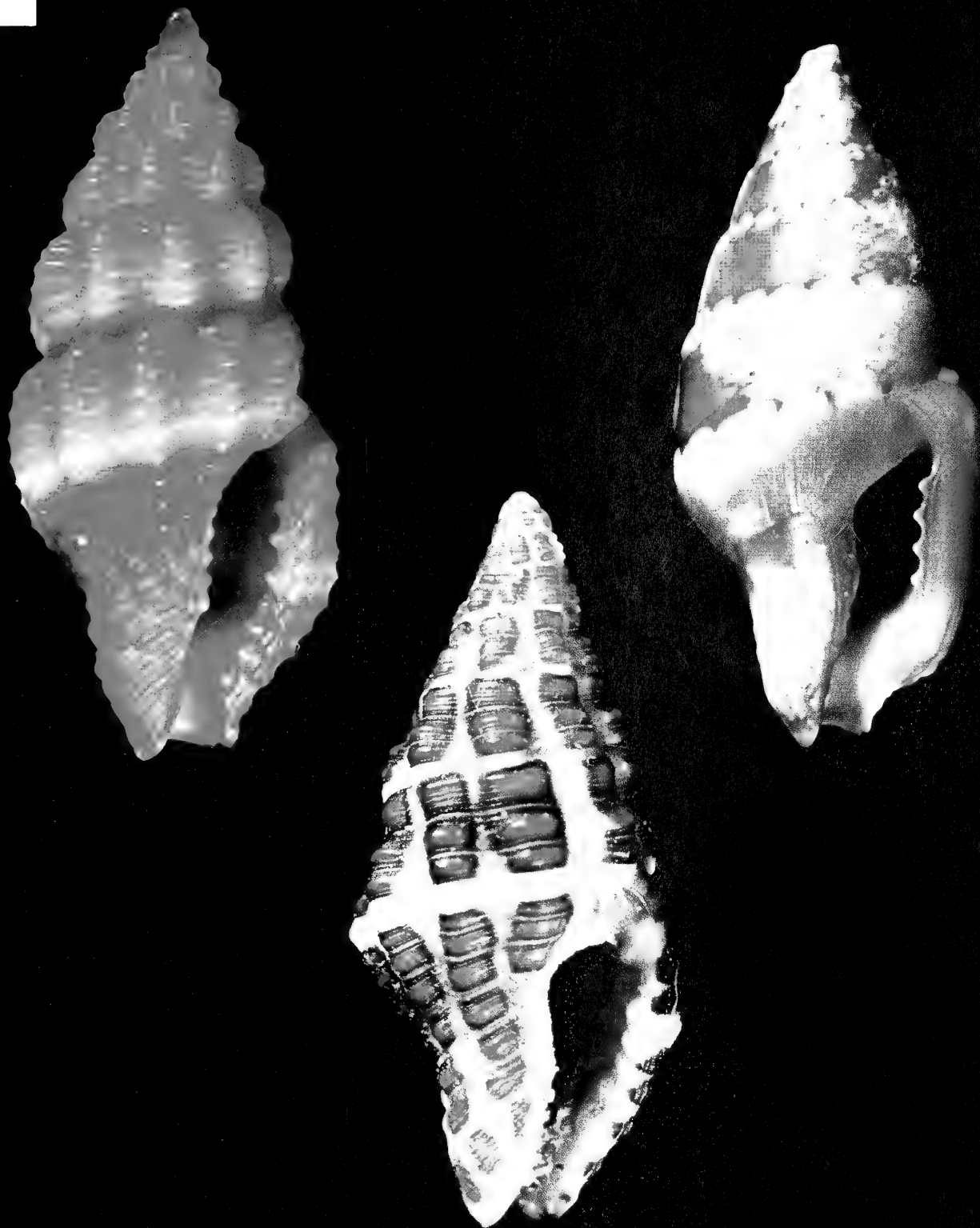
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QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

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In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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COVER: Dr. G. Thomas Watters of Columbus, Ohio, author of the two-part article, "North American Freshwater Mussels," in the June and September *American Conchologist*, is a man of many talents. Not just a freshwater malacologist, he is also an avid collector of marine shells, and, as he puts it, "one of those murex-heads." As our cover so eloquently attests, Dr. Watters is a fine photographer of micro-molluscs too. The three shells pictured are from the Bohol Straits in the Philippines and are all smaller than 10mm. They are (clockwise from top left): *Lienardia rubida* (Hinds, 1844), *Mitrella bella* (Reeve, 1859), and *Engina lanceolata* (Kuroda and Habe, 1971), identifications from Springsteen and Leobrera's *Shells of the Philippines*.

PRESIDENT'S MESSAGE

Being of sound mind, as soon as I returned home from the convention, I went to Europe to visit friends and photograph lighthouses. I had a wonderful time even though some of the roads I drove were downright scary. Anyway, I am back and have gotten down to COA business.

In the September's "Flotsam and Jetsam," there was mention of a new organization, the International Scientific Collectors Association (ISCA). In this issue there is an article written by Carl Cook, their Executive Director and a new COA member, explaining their purposes. I mention ISCA here because we (COA) need to be doing something to prevent our hobby from being legislated out of existence. We cannot simply rely on the ISCA alone to protect our interests. Their scope is far broader than ours, but we can be of assistance to each other. I have presented the idea to the board and we will be discussing it at our midyear meeting in January. If anyone has ideas on how we can become aware of legislation pending on a national, state and local level, please let one of the board members know. Also let us know if you are interested in becoming involved in the matter. It would be terrible to do nothing, and then five or ten years from now find that we can no longer collect shells.

The 1995 COA Convention is progressing nicely. Anyone who attended the 1989 Convention in San Diego knows what a wonderful time we had. Next year's Convention can only be better because of the experience the San Diego Shell Club gained in doing their first convention. I am truly looking forward to it.

If you have something you want presented at the January board meeting, please contact one of the board members. For clarity, complicated issues should be addressed in writing.

I want to wish everyone Happy Holidays and all the best in the new year. I hope to see all the board members in January.

LINDA

NOTICE TO PAY 1995 DUES:

By sending in the gold 1995 Dues Renewal Form inserted in this issue, you will continue to receive the *American Conchologist* in 1995. It will keep you informed on what is going on in the shell world and give information on the 1995 COA Convention in San Diego, CA.

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If we've done much live-collecting, we've encountered some form of restriction on shell collecting. We've heard the horror story about the Florida tourists who unwittingly broke the law by collecting shells, and received heavy fines and criminal treatment. Even armchair collectors have encountered restrictive legislation in the form of the Australian collecting regulations and export bans. California is off limits to collecting, as are parts of Florida, and other areas of that state are under siege. And yet there are places in the world where entire reefs are dynamited for the sake of a daily fish catch! What is wrong with this picture? As population grows, regulations on that population grow with it; often these regulations fail to address the real problem, simply appeasing the vocal but ignorant majority. Will shell collecting fall victim to this trend toward regulation without understanding? It is a very real prospect if we continue to wait for someone else to do something. The best lack all conviction while the worst are full of passionate intensity."

THE CRIMINALIZING OF SHELL COLLECTING

Are Shell Collectors Targeted Next?

by Carl Cook

As an amateur entomologist and archaeologist, I have observed with increasing alarm the current plethora of restrictive regulations, proposed and enacted, which are directed toward the privilege of collecting and acquiring natural history specimens both in this country and internationally.

Everyone who is interested in the conservation of natural resources — and no segment is **more** interested in conservation than natural history scientists — easily understands the extreme measures that have been required to stop the slaughter of elephants and rhinos in Africa. Also, every amateur archaeologist is well aware that the days of legal ancient burial excavations are past and gone. But there have been instances of well-meaning persons who attempted to salvage artifacts from construction sites — where they were about to be forever covered with fill dirt — **and these persons have been charged with grave desecration, heavily fined, and given jail sentences!** Such outrageous interpretations of the letter of the law have been completely devastating to these persons, criminalizing honest citizens for their well-intentioned service to science.

For a conchologist who should be fortunate enough to find a living *Epioblasma obliquata perobliqua* there would be absolutely no dilemma — he would immediately and lovingly return it to its stream bed home. The dilemma would come if the specimen he picked up happened to be a dead excavated shell. Should he add this once-in-a-lifetime treasure to his collection — clearly a violation of the U.S. Endangered Species Act, or should he drop it back on the stream side — to be eventually crushed under the boot of a fisherman or the wheel of an ATV? This is a good example of certain provisions (but by no means all provisions) of the Endangered Species Act and the Lacey Act which are pure political rhetoric designed to appease "animal rightist" groups and the scientifically uninformed public. These same provisions are ultimately sure to prove counter-productive to conservation efforts through strangulation of scientific research based upon the ready availability of study specimens and information largely furnished by the world's amateur scientists.

Are conchologists the next group targeted for attack by the "ban all collecting" forces? I think the answer is very clear. Witness the start of a movement in Florida to ban all live shelling along the southwest coast of Florida from Sanibel to the Keys. Isn't a total ban for all of Florida and the Caribbean a logical step from here?

What measures are open to conchologists to defend the continued privilege of collecting non-endangered live specimens, collecting, possessing and exchanging ALL naturally obtained shell specimens and naturally excavated fossil specimens?

1. I hope every member of the Conchologists of America will write to their two U.S. Senators and their congressmen in Washington pointing out the very valuable service to science

which is provided by natural history specimen collectors by providing specimens for distributional and taxonomic study, and expressing their concerns about the imposition of additional restrictions at this time. If you live in a coastal area, also write to your state congress.

2. Please also express your concerns to your senators and representatives about the many reported instances of overzealous prosecutions by U.S. Fish and Wildlife Services agents against citizens because of ambiguous regulations or acts done with a well-meaning intent. An example is the U.S. F&W.S. prosecution of a group of Illinois sportsmen who, during the 1993 midwestern flood, rescued a large quantity of duck eggs from the rising waters, incubated the eggs and released the young ducklings, but were fined \$5,000.00 because their effort was an "infraction of regulations relating to migratory birds"!!
3. Give your support to the International Scientific Collectors Association, the only international organization devoted entirely to addressing the problems discussed in this article.

What about **ISCA**? In July 1993, at Louisville, Kentucky, the new organization was founded to represent the interests of scientific collectors of natural history material, in particular, the amateurs; to facilitate best utilization of systematic material in scientific research; and to encourage the ultimate disposition of all such collections to public museums for permanent preservation.

It is becoming evermore apparent to anyone who collects natural history specimens for scientific purposes, or engages in exchanging material with international colleagues, that these pursuits are becoming subject to constantly increasing regulatory acts, and require, in many instances, expensive or difficult-to-obtain import and export permits to be conducted legally.

The situation for amateur collectors in Germany continues to be extremely bad; all living invertebrates there are completely protected from collecting. We surmise this could possibly include excavated snail and bivalve shells as well. In this hemisphere, Mexico is one of the greatest offenders; a scientific collecting permit currently costs U.S. \$700.00, and we frequently receive reports of instances where corrupt city officials have added further charges for "local permits." It is seemingly possible for U.S. Customs to require compliance with Mexico's permit requirements under terms of the North American Free Trade Act for imported specimens from Mexico.

Reports continue to be received at **ISCA** from both museums and private collectors about specimen shipments being seized and held by customs authorities because of some supposed, obscure permit infraction. This is happening with increasing frequency in the U.S. as well as in several other countries like Germany. We are left to wonder what is going to become of this

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The Grants and Scholarships Program is one of the most important and at the same time one of the most rewarding of COA's projects. It enables workers in malacology to undertake studies which further malacological science. Without the money we provide for this purpose, much of this work might not be done. During the nine years since the Grants Program was instituted, COA is extremely proud of the fact that we have given over \$30,000.00 to deserving students and malacological workers and their projects. This issue, we are fortunate to see some of the results of our grant money. COA Grant Recipients Jay Schneider and Frank Thomas approach the study of mollusks from two different angles. One furthers taxonomic knowledge about mollusks for science and to the benefit of the collector. The other teaches us about man and civilization using mollusks as a tool.

EVOLUTION OF COCKLES AND AN INTRODUCTION TO CLADISTICS

by Jay Schneider, PhD

Bivalves of the family Cardiidae, or cockles, display a wide variety of shell shapes, ribbing and ornamentation patterns, hinge morphologies, and numerous other conchological features. It is this remarkable spectrum of shell shapes, spines, and complex hinges that has made cockles one of the most popular bivalve groups among collectors. For these very same reasons I decided to study the evolution of these clams for my doctoral dissertation at the University of Chicago (Schneider, 1993). I decided to use a methodology called cladistics to study the phylogenetic relationships within cardiids.

In recent years, a method called **cladistics** has become increasingly popular among systematists studying all sorts of living things: animals, plants, and microorganisms. Cladistics was invented in 1950 by Willi Hennig (see Hennig, 1966; Wiley and Funk, 1991). Some of the ideas underpinning cladistics had existed for decades, and many malacologists, such as William Healey Dall and Adolph Naef, anticipated what later would become cladistic philosophy and methodology. Cladistics is based on the study of **shared derived characters** for figuring out phylogenetic relationships. For instance, one of the states defining the taxon *Aves* (birds) is the derived state of having feathers. However, classification schemes of many groups, including numerous groups of molluscs, are based on overall similarity. Simply basing classification on similarity may lead to classification by **shared primitive characters**. A primitive character is a character that is present in the ancestor of a given lineage. A derived character is a character which is present only in all or some of the descendants of the ancestor of a given lineage. In mammals winglessness and non-retractable claws are primitive characters; wings and retractable claws are derived characters that unite bats and cats, respectively.

Regarding classification, one would not consider to be valid a taxon for all those mammals which had not taken up flight, i.e., naming a taxon including all mammals except bats. Neither would one propose a name for that group of mammals which included all those forms which did not have retractable claws, i.e. naming a taxon for all mammals except cats. Unfortunately, this type of thinking has been used by taxonomists, and has produced spurious classification schemes resulting in confusion across a broad spectrum of living things, including molluscs.

For about a decade, students of gastropod evolution have been using cladistics to disentangle the evolutionary patterns of snails (see Ponder [1988] and Bieler [1992] for reviews). Application of cladistic techniques to other molluscs has been slower in coming. Waller (1978) produced a cladistic phylogeny of the pteriomorphs (arcs, pen shells, oysters, scallops, etc.) and Boss (1978) cladistically analyzed the pandoroids (*Pandora*, *Thracia*, etc.), but further

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(Continued on page 18)

OF MOLLUSCS AND WOMEN: FORAGING STRATEGIES IN THE CENTRAL GILBERT ISLANDS, KIRIBATI

by Frank R. Thomas

COA Grant recipient Frank Thomas is a shell collector of a different sort. In his studies on the cultural habits of native Pacific islanders, he zeros in on the common instead of the rare species, and the nutritionally instead of the aesthetically attractive ones. Broken specimens in village garbage dumps interest him more than pristine live-taken ones. Come along with Frank Thomas to the Gilbert Islands and learn to look at shelling in a brand new way...as something to do when you can't go fishing, as dinner on the table.

For westerners, coral islands conjure up a vision of warm turquoise waters lapping a sun-soaked shore fringed by swaying palm trees. According to some travellers, however, these islands were perceived as hostile environments which contrasted sharply with the more abundant resources elsewhere.

As I gleaned through both popular and scientific descriptions, I was determined to discover those realities for myself. Anthropology seemed to provide the best avenue for studying the customs and culinary habits of people in faraway places. My additional interest in the past naturally led to the theories, methods, and techniques of archaeology.

Having expressed to my doctoral committee the desire to work on one or several remote Pacific atolls, I finally took off in the Spring of 1993 for the Republic of Kiribati (pronounced "kiribas"), a group of 33 atolls and reef islands scattered over an area of five million square km of ocean near the equator. These islands were said to be the most traditional in Micronesia, and there was the added attraction that comparatively little had been written about the inhabitants and their relationship with their environment. I eventually focussed my research on three atolls in the central Gilbert Islands: Abemama, Maiana, and Tarawa.

My objective was to focus on resource by-products which could be easily identified years after they were discarded. In archaeological parlance, this meant something durable. It did not take long to realize that shells would provide such materials. And so I inevitably became a mollusc enthusiast in the process.

The outcome of this year-long adventure allows me to conclude that while terrestrial resources, including potable water, remain precarious, the ocean and lagoons provide an abundant and reliable supply of fish and invertebrates.

Anthropologists at large have long been interested in documenting strategies of food acquisition among past and contemporary cultures. In their attempts to better understand the decisions guiding those strategies, ecological anthropologists have borrowed from

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(Continued on page 21)

WENTLETRAP EGG CAPSULES AND VELIGERS:

What they are and how to see and study them

by Robert Robertson

Charles N. D'Asaro (1994) has published in *American Conchologist* an excellent illustrated account of some of the lower neogastropod egg capsules assembled by the great Danish marine biologist Gunnar Thorson (Fig. 1). D'Asaro, however, hardly mentioned veligers, the usually tiny snail or clam larvae that emerge swimming from the egg mass or capsule exit hole (some species have crawl-away young instead). In an earlier *American Conchologist*, Betty Jean Piech (1992) discussed teleplanic ("far-wandering"), later stage veligers. She based her article mainly on the work of Rudolf S. Scheltema (Woods Hole Oceanographic Institution), a pioneer in such studies.

It is perhaps appropriate that I should discuss another kind of egg capsule and the newly hatched veligers coming from it. I had the privilege of learning from Thorson himself how to study and draw veligers. He was such an imposing father figure that he had to be reduced to fit in a column here (Fig. 1).

The only costly equipment needs are a dissecting (for large capsules or veligers) and a compound microscope, each with a camera lucida (not a camera at all, but an old fashioned but still useful drawing aid), together with microscope lights, calibrated ocular and stage micrometers (to take measurements). Perhaps some of the microscopical equipment and supplies could be used at or loaned by a college or university near you?

Minor microscopical supplies include coverslips and micro culture ("depression") slides: those I use have concavities 0.8 mm deep and 18 mm wide (large veligers would need a deeper cavity).

Additional needs are a bright tensor-like lamp, unlined paper, a pencil, an eraser, pipettes (from your local pharmacy), and a small supply of seawater. For transferring this (better than pouring), a gravy baster from your nearby hardware store is handy. Seawater and microscopes do not mix well. Hardware stores and supermarkets are good sources of cheap biological supplies.

How does one find and study veligers? One can collect them from the plankton (floating life in the sea) with a net, but then at least in the tropics there are few individuals of often many species, most of uncertain parentage. The best way is to have identified animals lay their eggs in bowls in the laboratory (or kitchen). Some snails lay relatively large eggs that develop into a few non-planktonic, crawl-away young (lecithotrophy). The veligers of such species are "planktonic in the egg capsule" to use the quaint phraseology of an early worker. Other snails lay smaller eggs that develop into numerous veligers that emerge from capsules and swim and feed in the plankton (planktotrophy).

Most veligers are microscopically small but nonetheless are visible in a glass beaker of seawater with the naked eye. A tiny speck slowly spirals upwards, then drops, then rises again. Veligers on the bottom of the beaker are generally moribund. So, with a pipette suck up a veliger above the bottom and release it into the cavity in the culture slide. Cover the drop of seawater with a cover slip, trying not to trap air bubbles while keeping the veliger (s) in the cavity. After a while, trapped in their tiny glass-walled prisons,



Figure 1. Gunnar Axel Wright Thorson (1906-1971) in 1967, Beaufort, North Carolina.

veligers stop swimming and become motionless, presumably because oxygen is depleted. Slight heat from the microscope light also seems to hasten the process. If the process is still too slow, a dilute solution of a narcotic such as KCl (potassium chloride) may be tried, using a tiny paper towel wick of the solution under the coverslip. The veligers can then be studied with the dissecting and compound microscopes, the former with incident light and low magnifications and the latter with transmitted light and higher magnifications. Photographs of small veligers are invariably bad (scanning electron micrographs excepted, which are beyond the scope of this article). With light, depth of field for a small veliger is poor but nonetheless may be somewhat revealing (Fig. 5).

The camera lucida puts a split prism over the eyepiece. With a mirror, these superimpose the image of the object seen with the microscope onto a piece of paper to the side of the microscope. It is very important to balance microscope and secondary lights to make both images about equally clear. With pencil on paper, trace around the objects of interest; no artistic ability is needed. If the veliger moves or if the microscope is refocused the image will be moved slightly and will have to be repositioned. Now try drawing a suitably positioned veliger with the aid of a camera lucida, starting with the shell, later fitting in the body and velum by eye.

All the drawings in this article were rendered using a portable Unitron compound microscope with a camera lucida attached. Fig. 5 was also done using the Unitron compound microscope but this time with a camera attachment and a Pentax 35 mm camera.

The drawings for this paper were made when I worked at a primitive marine laboratory that I set up in 1972 near the southern end of Virgin Gorda, British Virgin Islands, West Indies. I was studying the life history of the common shallow water wentletrap *Epitonium albidum* (d'Orbigny, 1842), work completed several years later at the Bellairs Research Institute of McGill University, Barbados (Robertson, 1983b). I also made cursory observations over the years in the Bahamas.

The adult wentletraps, with a shell up to 25 mm long, are first male and then female (Robertson, 1981). They were easily found, often in sexual pairs, because they parasitize a large, shallow water, often colonial sea anemone named *Stichodactyla helianthus*.

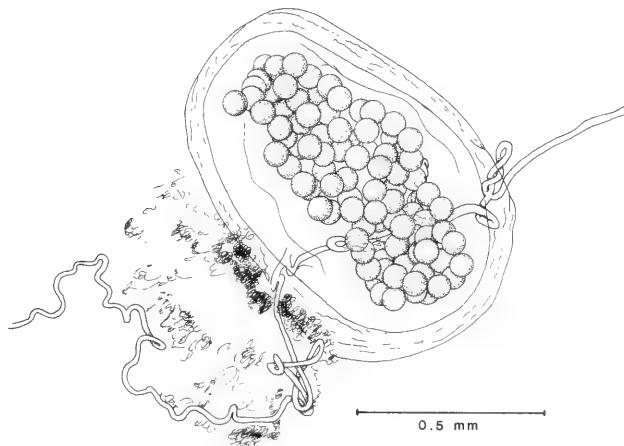
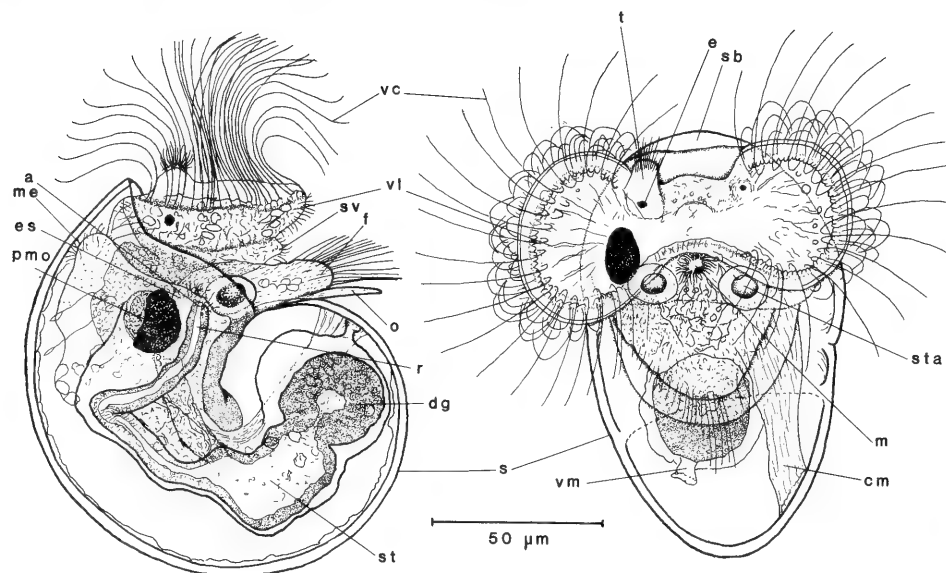


Figure 2. One *Epitonium albidum* egg capsule with the elastic mucous thread attaching it to two other capsules in the "chain." The eggs inside are not connected by threads.



Figures 3-4. Two tiny *E. albidum* newly hatched veligers in side and front views. Only the right velar lobe is shown in figure 3.

Abbreviations: a, anus; cm, columellar muscle; dg, digestive gland; e, eye; es, esophagus; f, foot; m, mouth; me, mantle edge; o, operculum; pmo, pigmented mantle organ; r, rectum; s, shell; sb, shell beak; st, stomach; sta, statocyst; sv, subvelum; t, tentacle; vc, velar cilia; vl, velar lobe; vm, visceral muscle (?). Remember that 1000 μm = 1 mm; 25.4 mm = 1 inch.

Helianthus is a sunflower, the anemone's shape and size approximating the upper stalk and outspread head of that compound flower. The epitoniids hide in sand around the anemone's base, often hidden in clusters of their own conspicuous egg capsules.

These capsules, laid in the lab and attached to one another by elastic mucous threads (Fig. 2), are small and in nature get covered with attached sand grains because for a while after being laid their outer surface is sticky. The eggs inside are tiny, about 68 μm in diameter (there are 1000 μm in 1 mm and 25.4 mm in one inch). There are 137 or more eggs in a capsule, and an inch-long wentletrap lays about 200,000 eggs in its lifetime. As the female wentletraps grow larger they grow larger capsules containing more eggs. Egg size, however, remains almost exactly the same both within different size classes and between populations: 68 μm . Thus this is a good species character! (not, however, a very convenient one for the average shell collector).

Needless to say, myriads of veligers are spawned and few come successfully to reach their adult, bottom-dwelling stage. After five to six days the veligers hatch, swimming out of the capsules. At this stage they look somewhat like the drawings (Figs. 3-4), which show side and front views of two animals. The conspicuous paired velar lobes (whence the word "veliger") have hairs (cilia) around them that beat to and fro and propel the animal through the water (on a very small scale). Veligers are filter feeders that subsist mainly on single-celled algae, even for species whose adults parasitize sea anemones. When the larval stage ends, at metamorphosis, the gut and other organ systems undergo drastic changes for adult life. Only insects in their life cycles undergo greater changes. Compare Figs. 2 and 3 with an adult wentletrap!

Anatomically, veligers are almost as complex as the adults, and no two veligers are alike (abnormalities are common). One could go on and on about the structures visible in these minute, conveniently transparent larval shells. Instead, the noteworthy structures are labeled in Figs 3 and 4. One can mention here, though, that for some obscure reason one tentacle develops before the other. The conspicuous dark (purple) organ of *E. albidum*, seen in both views, is of uncertain function. It produces a colored paste with the particles in suspension. One theory is that the purple deters predators (an adult has the same stuff). The pair of eye-like structures on either side of the mouth are statocysts (balancing organs). As in the adult, there is a foot bearing an operculum.

For study of later developmental stages, a supply of concentrated unialgal culture is necessary. With any luck it should be possible to

Figure 5. Photograph of a newly hatched veliger of *E. albidum* (compare with figure 4, which is oriented somewhat differently).



rear the larvae through settlement and metamorphosis, ready for life with sea anemones on the sea bottom. But this is beyond the scope of this article. Suffice it to emphasize that the veligers shown here are at a very early developmental stage, when the shell has only a little more than one whorl. The full-grown protoconch (larval shell) has about four whorls and is about 0.4 mm long.

These veligers must stay feeding and growing in the plankton for several more weeks or even months before they settle and metamorphose on the sea bottom (near the right sea anemone?).

A newly hatched larva has to grow substantially in the plankton. I have not seen the late (premetamorphic) veliger because I had no algal cultures at Virgin Gorda or Barbados. Such cultures might enable someone to complete the life cycle in the lab. In nature, postlarvae of *E. albidum* grow very fast (Robertson, 1983a).

Bear in mind that the above concerns only the early stages of one species. Other wentletraps (epitoniids) and other marine snails have yielded other, often surprising results. Much remains to be learned. Perhaps you can contribute! Be a Thorson convert!

I thank Charles N. D'Asaro and Gary Rosenberg for their comments.

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Flotsam and Jetsam



SHELL COLLECTORS, like other natural science hobbyists, often feel ignored by some of the professionals in their field. But we amateurs can take heart, and deserved praise, from this quotation from The Nature Company's catalog:

Where would the world be without amateurs? Those garage tinkerers, backyard enthusiasts, those weekend practitioners whose passion owes nothing to a paycheck or professional laurels. In this time-tight age, such devotion seems the product of a bygone day. Remember when the Olympic Games were for amateurs? The fact is, in the world of natural science, amateurs are among the most vital contributors, even today. To a great extent, they are the eyes, ears and hands of the scientific community in areas of the globe not covered by thinly-stretched research funds. Beyond that, they are an inspiration to us all.

The STATE OF WASHINGTON now requires collectors to purchase a state shellfish license and has also banned all collecting of abalone.

Apparently the **TEXAS-SIZE JUNONIA** in the convention coverage photo in the September issue of *American Conchologist* has set some people to wondering. No, it's not a real shell. Yes, it is a woodcarving. It came from the Philippines and was donated to the auction by Bev and Al Deynzer of Showcase Shells. The lucky bidder was Bob Lipe. There are other species available in Texas sizes as well.

COA member **MARI HUGHES** writes: One time I wrote my story of collecting sea shells in the beaches of England and France, English Channel. You all entitled it "Collecting Shells Where Shells Once Fell." Everyone liked that. I just got back from ceremonies in Normandy and now friends call and write, "Did you get any shells?" And so I am writing to tell you, "Yes, and they were delicious." (Sorry, Mari, we can't find that particular article in any old COA Bulletins, although we did find a number of others. Some other publication perhaps?)

OYSTERS WERE SCARCE this Thanksgiving and are likely to be in just as short supply for Christmas. And those marvelous Apalachicola Bay oysters will be virtually unobtainable. Flood waters from south Georgia and the Florida Panhandle early in the summer poured down the Apalachicola River and into the Bay, and the massive influx of fresh water killed most of the oysters in that area. Water contamination halted harvesting in a wider area. Although the water quality has improved greatly, there still isn't much alive to harvest. It'll have to be Chesapeake oysters for our festive recipes over the holidays.

AVOID RAW OYSTERS? With good reason! A marine bacteria, *Vibrio vulnificus*, has been contaminating Gulf Coast oysters, endangering the area oyster industry and the lives of people with diabetes, liver ailments, AIDS and other health disorders. It's also given more than a few otherwise healthy oysters-on-the-half-shell aficionados a bad case of stomach cramps and diarrhea. The consumer group Public Voice has been urging that mollusks carry warning labels for two years. Rather than shut down the industry, thereby costing jobs and income, the FDA has proposed that oys-

ters taken from April through October be labeled for consumption only after being cooked to destroy the bacteria.

PINKY PINKERTON of the National Capitol Shell Club, writes that the above bit of flotsam about the push to put warning labels on mollusks has set him wondering. "Does this group realize what a task they are proposing, given the hundreds of thousands of species and the difficulty of finding them all?" He states further that "I do agree that a warning label should be placed on some species. It is my belief that collectors have been driven insane trying to identify *Latiaxis*. Also, should not some warning be posted that collecting mollusks is hazardous to the pocketbook?"

THE PALEONTOLOGICAL RESEARCH INSTITUTION has just announced the receipt of a National Science Foundation Grant of over \$380,000, earmarked to improve PRI's fossil and shell collections, already ranked among the largest in the country. The money will be disbursed during the next two years for storage equipment and for salaries for two additional staff members. PRI Director Warren D. Allmon says, "A museum's collection of specimens is like a library. Fossils are our primary documents, the basic sources of information and insight into earth history and the evolution of life. This information is what PRI then shares with everyone from research scientists to school children." *



JORDAN STAR sends us another of his photographic suggestions for using the official COA mug. Don't have one yet? Write to COA Properties Manager Hank Foglino at 4 Trent Court, Smithtown, NY 11787-1266. Mugs are \$3.00, or two for \$5.00. Add \$1.00 postage. Make checks payable to COA. (Please, folks, don't make your checks payable to Hank! We have to keep him in short funds or he's likely to squander profits on that fabulous shell collection of his!)

LA CONCHIGLIA will issue a separate English language edition starting in 1995. The current practice is to run dual columns, Italian beside English. The editors tell us that this will mean that each issue has almost double the content of the previous numbers.

RUSSIAN MALACOLOGISTS are issuing a growing stream of publications, especially on shells from their icy waters like the cold water wheelks. The latest to come to our attention is **Recent Ancistrolepidinae (Buccinidae)** by Roman Egorov and Sergey Barsukov, published in Moscow in June 1994. It is published in English, in a limited edition of 450 copies, and covers a total of 28 species and 8 subspecies. You may order this book from Christa Hemmen, Grillparzerstr. 22, D65187 Wiesbaden, Federal Republic of Germany.



* See the September 1994 *American Conchologist* "Publications on Fossil Mollusks" column, which features PRI.

COA 1995 — JUNE 23-29

RETURN TO SAN DIEGO

Those of you who came to San Diego in 1989 don't really have to read any further — you **KNOW** that you don't want to miss a convention in San Diego! However, if you didn't get to San Diego before, be sure to make your plans **NOW** to come, and start saving for the trip. This will be a convention you will not want to miss. We have the best weather in the U.S., many tourist things to see and do, including the world famous San Diego Zoo, the Wild Animal Park, and numerous other places to visit. Plan to stay a few extra days after you get here.

Our Convention will be located centrally in downtown, within walking distance of many interesting shops, restaurants, the Bay, and other sights and attractions. The Convention Hotel is the Pan Pacific, a spectacular new hotel that has as its theme the emerald — this will become evident as soon as you see it. Many of the rooms have excellent views of the city and/or the bay. In addition to the excellent restaurants in the hotel (and the Atrium Lounge), there is a complete Fitness Club, and an outdoor swimming pool with Jacuzzi. A Business Center is available with complete office facilities.

Our Convention will have the standard complement of speakers, including one or more world-renowned malacologists, auc-

tions, drawings, and the world-class Bourse, plus a few other attractions to please you. Besides the programs, auctions and such, we will have some optional extracurricular activities in which to partake: a trip to the new Scripps Aquarium and behind-the-scenes excursion; a fossil collecting trip, if the necessary permits can be arranged; an evening dinner cruise on the famous San Diego Bay. In addition, after the convention, we will conduct a trip into Mexico for shore collecting, about 25 miles south of the border.

Let's have a great turnout! If you are new to COA and have never been to a Convention, this will be **THE** occasion to get your feet wet! The San Diego Shell Club invites you all to come and enjoy our great city, and the camaraderie of shell collectors from around the world.

Don Pisor, Convention Chairman
10373 El Honcho Place
San Diego, CA 92124
☎ (619) 279-9324
FAX: (619) 234-0250

REVIEWS:

AUSTRALIAN MARINE SHELLS, Parts 1 and 2 by Barry Wilson

All collectors interested in Australian shells should wake up to a grand celebration for Barry Wilson's new books. Have you ever wondered, if Rolls Royce were to publish a shell book, how it would look? These two volumes have attained that highest standard that we come to associate with a Rolls Royce Automobile, maybe without the Connolly leather. The substitution of glossy hard cover for the leather of the past is a modern day concession to mass market practicality. It is indeed refreshing to see, among the new crop of shell books, these two books that have such quality built into them, that are so obviously a labor of love.

To start with, captivating photos on the covers — the eyes and antennae of a *Strombus* on Part 1, and the gorgeous living volute on Part 2 — are tantalizing leads to the readers that these information-loaded books will not be boring. Patrick Baker's photo plates are stunning, recalling some of the best in Japanese books. There are 44 color plates in Part 1 and 53 in Part 2. At first I thought it was a pity that these splendid color plates should come after the text pages. Further reading, however, convinced me that Barry's text is just as well done, and that placing it in front highlights its scientific importance. The author grew up as a shell collector, with his earliest interest in their beauty; he continued as an educated career malacologist. His childhood fascination with their beauty and his later interest in their science are harmoniously expressed in these books.

These two volumes cover marine species of Prosobranch Gastropods, five of the six Orders of which are covered in Part 1, including *Haliotis*, *Trochus*, *Cerithium*, *Strombus*, *Cypraea*, *Cassisi*, *Cymatium*, *Epitonium*, etc. The sixth Order, Neogastropoda, including the popular *Murex*, *Olive*, *Volute*, *Cone* and *Terebra* are covered by Part 2. Incidentally, the use of the term "Prosobranch" as a group can only be considered in the traditional sense, because various taxa grouped under this heading are found not to have simi-

lar key characteristics; therefore, the term is not scientifically sound based on contemporary thought. If you wonder whether there will be other such volumes to follow, the answer is yes, plans are being made for future volumes to cover such groups as bivalves.

These books are intended for general reference and identification purposes, so description of each species is concise, followed by locality and some short discussion. Where appropriate, references are given within the text. Similar arrangement is applied at generic and family levels. The immediate listing of references following the discussion of each taxon is a very handy format for persons who want to pursue further studies. Each of the two volumes is designed to be used individually, so each has its own index. Creative use of various type styles and sizes to delineate levels of taxonomic groupings makes for very easy reading. Credit should go to Robyn Mundy for her excellent overall graphic design. The exquisite line drawings used within the text to illustrate many of the smaller species were drawn by Carina Wilson, the author's daughter. These finely detailed illustrations, 345 in Part 1, and 187 in Part 2, should facilitate identification better than if they were photographed.

Within the taxonomic groupings that these two volumes intended to cover, the number of species discussed is very extensive. With 1,170 in Part 1, and 1,258 in Part 2, distributed among 72 families and 343 genera in Part 1, and 222 genera in Part 2. The combined 2,428 species should cover most marine prosobranch shells from Australia, even for an advanced collection. This, combined with the high quality of their text, their creative graphics and the handsome packaging of the books establishes them as the current benchmarks of a good shell book.

—Donald Dan

WHAT IS IT?

From Gloria Pearson comes the following letter concerning Don Shasky's mystery turrid of September 1993 [p. 3] and Donn Tippet's ID of that species in March 1994 [p. 9] (apologies to Gloria for the publication delay — the June issue was in press when we received her letter, and the September issue was already overflowing its staples), and offering two more mystery shells for your pleasure and puzzlement.

I had to write to **American Conchologist** as I am still confused about the ID of the unnamed turrid that Donald Shasky collected on Majuro Atoll [Fig. 1].



Fig. 1.
Shasky's
turrid.

My husband and I lived on Kwajalein Atoll for 12 years. When we left Kwajalein in August of 1991 Kermit and I had one of these interesting turrids in our collection of shells [Fig. 2]. We had compared our turrid to the white shells pictured as *Clavus opalus* (Reeve, 1845) in Pl. 4 Fig. 11 in Cernohorsky's 1978 **Tropical Pacific Marine Shells** [Fig. 3 below], and as *Clavus (Clavus) opalus* (Reeve, 1845) in Pl. 80, Fig. 15 in Springsteen & Leobrera's 1986 **Shells of the Philippines** [Fig. 4 below] and we could not see our turrid as this species.

After reading Donn L. Tippet's letter in the March 1994 issue of

American Conchologist where he identified Shasky's Majuro turrid as *Plagiostropha opalus* (Reeve, 1845) I photographed our turrid. As you can see our Kwajalein turrid is closer to Shasky's turrid than it is to the white shells in those plates. Although Shasky did not give a size or color of his turrid, it appears to be a small-sized shell and have some color on it.

Our Kwajalein specimen is 8mm in length. It is golden honey in color with the edge of the ribs and the outer edge of the lip a slightly lighter shade. The shell is shiny and translucent. It was not a live-found specimen but I think the shell is in excellent condition.

With a magnifying glass I can see only fine lines of growth that are the shape of an "s" in reverse — these growth lines go vertically, suture to suture. There are no thin or irregular riblets on the body whorl. There is a large bulge on the body whorl opposite the aperture and a parietal button on the upper columella. The five rows of vertically aligned ribs have a large, quite flat area between them. The ribs of our turrid are in the shape of even half-rounds, so in profile, our shell has an unusual scalloped outline.

The turrid from Majuro has a much more irregular outline. From the photograph it looks as if his turrid has a shallow spiral groove

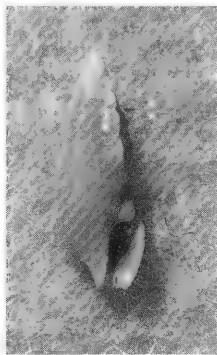


Fig. 2.
Pearson's
turrid, 8mm.



Fig. 3. Cernohorsky's
Clavus opalus "up to
20mm...sculpture of
interspaces variable,
either with distinct
overriding spiral striae in
C. opalus, or with weak,
sometimes obsolete spirals
in the form *ebur* Reeve,
body whorl usually with
low, irregular and thin
axial riblets on the body
whorl...."

Gloria Pearson 4764 Shearwater Lane Naples, FL 33999

near the center of the whorls, something that makes the profiles of our turrids different!



Fig. 4. Springsteen
and Leobrera's
Clavus (Clavus)
opalus "...encircled
with fine spiral
striae, strongest on
the body whorl...a
parietal "button" is
present on the
upper columellar
wall; reaches
20mm."

I am curious about what the *Pleurobema ebur* (Reeve, 1845) [that Cernohorsky synonymizes] looks like and have thought that our smaller brown turrid might be that species?

I have also enclosed 2 photos of shells [from

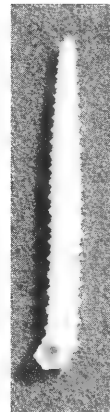


Fig. 5.
Pearson's
triphorid.

Kwajalein] that we have not been able to ID. Fig. 5 is a pure white very slender 9.6mm Triphoridae. There are two rows of nodules on each whorl with a larger sized row just below the suture and a smaller one just below that. The space between nodules is about equal

to the width of the nodule. Fig. 6 is a real "mystery" to us. It is 4.5mm long. It is pure white and translucent. The whole shell is evenly thin as if it were blown in a mold. It grows with a twist to one side. Each whorl is in the form of a keel. There are 10-12 evenly spaced spiral ridges that cover the whole shell from the top of one keel to the top of the next keel. These shells were found in a mixture of fine broken shells and flaky sand that I had bagged at 30'-40' at the end of an ocean side dive.

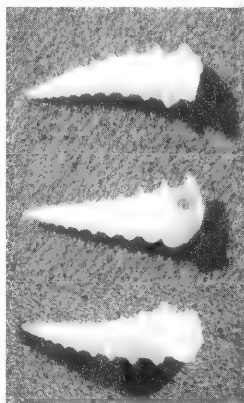


Fig. 6
Pearson's
mystery shell.

COA RECEIVES GEORGE W. RODGERS COLLECTION

The shell collection of Texan George W. "Hank" Rodgers has been donated to the Conchologists of America for sale at annual auctions to benefit the Scholarships and Grants program and the **American Conchologist**. Mr. Rodgers purchased the core of his collection from a San Diego collector's estate many years ago. Both men had a primary interest in *Cypraea*, but the collection is a general one, worldwide in scope, with many cones, pectens and volutes, as well as numerous small eastern Pacific species. The first of the material from this collection will be sold in the 1995 Auction in San Diego. Don't miss the opportunity to add some of these fine specimens to your collection, and to benefit COA's educational programs as well.

Shell Collecting Makes Strange Bedfellows:

An Obituary of John R. Paduano, Founder of COA

by Lynn Scheu

"John R. Paduano of Newport, Rhode Island, began collecting seashells during his career in the U.S. Navy. Tours of duty in tropical areas enabled him to amass an exceptionally large shell collection. After retirement at age 55, he decided to try and fulfill his dream to organize all known shell collectors. Using the **Petit Directory of Conchologists**, in June of 1972, he embarked upon this ambitious project." So begins the official **Twenty Year History of the Conchologists of America**. That long association between Paduano and COA ended these twenty-two years later, on January 24, 1994, when he passed away.

Shortly thereafter, we realized how very little we know about the man. We do know he joined the Navy at 18 and made a 37-year career of it. We know he traveled a great deal with the Navy and collected shells from the exotic coasts he visited. He began collecting in the early 1960's and he never tired of his hobby. After years of general collecting, he came to specialize in cowries. The last we know of him is that he and his wife moved from Newport a few years ago to Lake Worth, Florida, where he passed away last January. A paltry few facts on a man who meant so much in our lives.

But I have learned a bit more. According to an interview with John Paduano published in **Newport This Week**, August 30, 1974, his collection was considered "the best and largest private collection of sea shells in New England." Learning there was no national organization for people with his hobby, he set out to form one himself, an organization where shell collectors could meet periodically to report on findings and to make trades among members. John Paduano told the interviewer, "Things we consider junk here, ordinary things to this area, others are looking for and will trade for. Things they consider junk are things that people from around here may be looking for."

And so he assembled those seven collectors at the Newport Motor Inn October 16 - 18, 1972 to start Conchologists of America. Our history notes these people: Kirk Anders, Fort Lauderdale, Florida; Mrs. Robert Armstrong, Westford, Massachusetts; Carl Erickson, Auburn, Massachusetts; Dorothy and Robert Janowsky, Brooklyn, New York; Miss Mavis Walkup, Clovis, New Mexico, and John Paduano. John served as host at this first convention. But then he virtually dropped out of sight, allowing others to conduct the infant COA. No word of him appears in old newsletters, and he never held an office. All these people are dead now, except the Janowskys of Mal de Mer, and perhaps Mavis Walkup, who has disappeared. And with them, their memories. Dottie Janowsky remembers only that he brought people together to form COA, then stepped back and let it happen. She says **no one** knew much about him.

I have one more piece of information about him, a rather surprising one. We may find it remarkable that one man with a dream could, in his lifetime, found an organization like the COA we know today. What is even more remarkable: John Paduano founded a second special interest group, one with an equally rapid success and growth! The story goes:

His widow, Mrs. Eleanor Paduano, notified COA of the death of our founder several months afterwards by mailing to me a short note, along with a fat blue looseleaf binder. While sorting her husband's effects after his death, Mrs. Paduano apparently turned up this notebook. Inside the front cover were a **COA History**, the above-quoted interview, and a group photo of the 1978 COA Convention at Long Island. She assumed it was a COA scrapbook and promptly mailed it off to me with a brief note saying her husband had passed away Jan 24. This parcel arrived just at **American Con-**



COA Founder John Paduano and friend.

chologist deadline time. Your rushed and harried editor, intent on the immediate, barely scanned the note. I did glance inside the notebook to find the **COA History** and a lot of other miscellaneous-seeming photos, clippings and such. I really absorbed nothing beyond the immediate: The Founder had passed away. I dashed for the word processor to add John Paduano to the "In Memoriam" box for the June issue — I had no room or time for a proper obituary or for examining the notebook.

Several months later, after Convention, I got back to it. But it soon became apparent that not much more would be forthcoming. As I worked to compile information for a proper obituary, I met with dead ends. My file of **COA Bulletins** of the early days held nothing about him. Rich Goldberg who researched pictures for the **History** had learned little. Old meeting notes and COA minutes held nothing. More letters and phone calls to Mrs. Paduano yielded no information. Lucille Green, COA Historian on the Job, also met with no results.

But the biggest disappointment of all was the blue notebook. I suppose I had expected it to contain all sorts of COA mementos, all sorts of documents and treasures, which I wanted to savor at leisure — thus the delay in examining it. But, when I unearthed it from one of my many paper heaps and looked beyond the few shelly artifacts tucked inside the cover, I found a carefully kept scrapbook of the **Cigar Smokers of America!** Photos, programs, clippings, cigar lore and propaganda, pages of snapshots, and pages and pages of cigar bands! Even a photo of Tony Curtis with stogie, autographed "to John." Stunned, I looked at the note from Mrs. Paduano again and realized I hadn't read it in its entirety: "John started the **Cigar Smokers** with just eight people. Hope you like

these pictures. He passed away 1/24/94." It seems Mrs. Paduano had confused the two offspring of her husband's organizational genius, Conchologists of America and Cigar Smokers of America.

But, I reasoned, perhaps she sent COA mementos to the Cigar Smokers! Another phone call to her got me no further. Some library work yielded only that the Cigar Smokers of America was, unlike the Conchologists of America, defunct, a casualty of the war on smoking. Another cigar organization was in the directory ... cigar band collectors! and John Paduano definitely collected cigar bands! I wrote to the secretary of that organization for information. No answer.

All I was left with was the notebook. As I leafed through the scrapbook, I became much better acquainted with the man who had assembled it. It wasn't such a dead end after all. I learned the Cigar Smokers were the older sibling, formed in 1961, eleven years before COA. Given this fact, I speculated that success of CSA may have given John Paduano the encouragement to form COA. And Dottie Janowsky remembers that forming organizations was something of another hobby with him. She thinks there were others.

How very strange! And how lucky for us that he collected sea-shells!

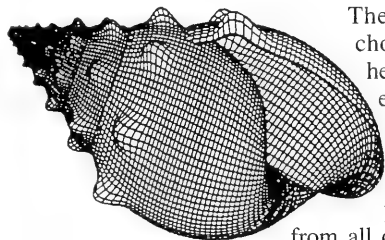
I also concluded, from all the photos of Humidor events (each chapter was called a "humidor") showing John Paduano clowning with various dignitaries, celebrities and cigars, that he was a very gregarious man who loved public gatherings, ceremony and ritual, so long as it wasn't too serious. I easily inferred from the clippings and captions that the man had a fine sense of humor. (Humidor! Really!) And I found in the scrapbook a truly marvelous picture of our founder, John Paduano, together with Milton Berle, who also subscribed to Kipling's philosophy, "A woman is only a woman, but a good cigar is a smoke." (You don't suppose Milton Berle collected shells?)

However, if you know more about John R. Paduano, or about the early days of COA, please let us know. I'd like to know him better. And the COA History needs your information — it is important to COA's future to preserve the facts and lessons of our past.



The First Long Island COA Convention, 1978. John Paduano is in the second row, second from the left. Can you find: Tucker and Cecilia Abbott? Rich Goldberg? Jordan Star? Wayne Stevens? Dick Forbush? Jack and Merle Odenwald? Margaret Tesky? Kirk Anders? We'd like to identify everyone. Can you help? I think I see Deena Martin, and Phil Clover, and...

FIRST INTERNATIONAL CONCHOLOGY CONFERENCE



The First International Conchology Conference is being held next month at a conference center south of Brisbane, Australia. From January 2-7, 1995, scientists of various disciplines will be convening from all over the world at the rustic

Tyalgum Tops on the edge of the world's largest known extinct volcano (the Mount Warning Shield Volcano) in the Tweed Valley in New South Wales. There they will study sea-shells and other bioforms using the most advanced possible mathematics and computer graphics. The organizers hope that

by pooling knowledge and ideas the conference can create, through consensus, common interdisciplinary terminologies, mathematical notations and graphics algorithms, and thereby lay the foundations for a new and truly modern science. Attendees are expected to have some knowledge of contemporary mathematics, CAD and BASIC and PASCAL computer languages.

COA has consented to be named as one of the sponsors of the conference, in company with a number of other scientific and malacological organizations. For more information, contact the Director for North and South America, Prof. R.M. Santilli, P.O. Box 1577, Palm Harbor, FL 34682, USA. Phone 813-934-9593. Fax 813-934-9275.

CONCHATENATIONS

by Gary Rosenberg

Your dedicated editor Lynn Scheu recently asked me to become a regular contributor to *American Conchologist*; this column, entitled "Conchatenations," marks the result of her persuasive efforts. One of my focuses will be notices of new publications and new species, particularly in the Western Atlantic; another will be editorials and reviews of subjects that straddle the unguarded border of conchology and malacology.

Dead or alive

What does "dead or alive" mean to you? Beach vs. gem? Polluted vs. pristine? Moribund vs. vibrant? Conchology vs. malacology? Each of these dichotomies represents a continuum. Each relates to the question of where the hobby of shell-collecting is heading.

For many years, the biological sciences have been tending away from systematics, the study and classification of biological diversity. When the systematist at the local college or university retired, he was replaced by an ecologist or molecular biologist. Explicit hypotheses and reproducible results were in, naming new species was out, the age of exploration was over, and we vertebrates assumed that most species had already been discovered anyway.

Well, we probably have discovered most of the mammals and birds, but unnamed invertebrates abound. Recent estimates suggest that there could be 30 million species of insects, 90% yet to be named. What's the biggest phylum of animals after Insecta? Mollusca. Somehow, we missed a lot of mollusks during the age of exploration. Probably because dredges and trawls don't work well on the hard bottoms now accessible to scuba divers. Or because we just didn't realize how small the ranges of land snails could be. Or because we assumed that all those dumpy brown clams in the river were the same species, but genetic studies proved otherwise.

Take from your bookshelf any identification guide for seashells. Can you tell whether the depths it gives are for live or dead collected specimens? Do the species still live where they used to live? Why don't we know? Because the age of exploration ended too early. Not only have we stopped discovering the new, we forgot to nurture what we once knew. Our expertise is dying out.

But maybe the pendulum is swinging back. Biodiversity is in. Last year the United States established a National Biological Survey. This year the National Science Foundation announced a program for Partnerships for Enhancing Expertise in Taxonomy (PEET). Species are good — we might discover new antibiotics, new food sources, new pest-eaters, new indicators of environmental health, or we might rediscover old ones. Naming new species is becoming respectable again. And with the aid of genetics, statistics and computers, some systematists have entered the world of explicit hypotheses and reproducible results — definitely mainstream.

Now, what about conchologists? Where will new ones come from? Shell-collectors, because of their collecting activities, are in position to notice and publicize the effects of habitat destruction. One way to keep our hobby vibrant is to expand the role of conchologists as monitors of species and environments.

Start in your own back bay. Repeated collecting in one area, in different seasons over a period of years can yield intimate knowledge of a fauna. Keep a notebook recording species seen alive, their habitats and relative abundance; keep some specimens so that identifications can be confirmed (and new species discovered). Such baseline information is unavailable for most local faunas but is essential for monitoring environmental health. Pollution and other forms of degradation might be signalled by local extinction or

changes in species composition. Different species will respond to different environmental changes. One will be most sensitive to oxygen content of the water or fluctuations in salinity, another to siltation or temperature, a third will depend on the presence of a particular plant, or be intolerant of a particular pollutant.

Discrimination of species is important to detecting such environmental changes. Suppose that there are two species of *Nassarius* in an area but they have been lumped together as a single species. If one of them became locally extinct, the change in the fauna would not be noticed, but it might have been an early warning sign of siltation that would threaten economically important fisheries. The disappearance of a pond snail might signal pollution contaminating local water supplies.

Collecting live specimens in moderation is important for documenting local faunas. If the fauna of an area was poorly known before an oil spill, how can we assess recovery in its aftermath? Dead shells can give some idea of a fauna, but might be hundreds of years old and thus not give an accurate indication of the species currently living in an area. The shells of specimens collected alive on known dates can also be used for chemical analyses that might help reveal causes of environmental changes. It is possible to determine roughly how long ago a shell died by studying changes in the amino acids composition of its protein matrix, but this is expensive, so it is much preferable to have direct observations and live collected samples of faunal constituents.

Live collecting might be viewed by some as undesirable either because of concern for the killing of the individual or fears of depleting natural populations. Someone who objects to killing the animal can collect shells that have died a natural death, noting if live ones were seen also, or content themselves with photographing living animals. Such photography, in addition to its aesthetic merits, often yields information valuable to the systematists. Someone concerned for the well-being of populations and species should know that habitat destruction is generally a far greater threat than over-collecting, at least for marine species. Even natural processes can kill far more shells than collectors do — a single storm can cast millions of shells on the beach to die.

Before embarking on a monitoring program, be sure to learn about regulations involving collecting and to obtain any necessary permits from local, state or federal governments. Also, especially in freshwater and terrestrial habitats, be careful not to collect endangered species.

Perhaps someday shellers will maintain life lists of species observed in the wild, as bird watchers have done for many years, and will contribute to species and environmental monitoring as birders have done. Shell collectors will document changes not only in faunas, but in habitats. Shell clubs will track the species found in their area each year and thereby remain vigilant for signs of pollution and habitat destruction. Perhaps shell clubs will enter into partnerships with local schools — teaching high school students about environmental conchology, or tapping the expertise of faculty at local colleges and universities to design monitoring programs. With planning, conchology as well as malacology can benefit from the surge of interest in biodiversity and the environment.

Congratulations are due the Rosenbergs. Gary and his wife Phyllis are the proud parents of a new baby girl, Amanda Pearl, born Tuesday, October 25. Her birth weight was 3.46 kg., and she measured .53 meters, just under record size, according to Gary. It seems Gary slipped a molluscan name past Phyllis too — Amanda is the name of a South African nudibranch genus.

RANGE EXTENSION FOR *LATIRUS BONNIEAE* SMYTHE, 1985

by Gene Everson

Latirus bonnieae was described in the **Journal of Conchology**, Vol 32, No. 1, April 1985. This species was known from Masirah Island, Sultanate of Oman, and attains a length of 70mm. This is another of the many species discovered by Don Bosch and his family.

In 1992 I received two *Latirus* in trade from Olive Peel of South Africa. They were dredged off Somalia in 1991 by Luigi Bozzetti, they measured 14mm and 32mm, and they were identified as *L. polygonus* forma *barclayi*. I was familiar with *L. polygonus* forma *barclayi* after collecting three of them at Sipadan Island, Borneo in June 1990. *Barclayi* is a color form of *L. polygonus* in which the black zones are lacking, the nodes and siphonal canals are white,

and the remainder of the shell is colored orange-brown. The two Somali shells were solid orange-brown in their entirety, except for the concentric cords which were white. They did not look like forma *barclayi* to me, but it was not until later in the year, as I was laying out an exhibit of Worldwide Fascioliariidae, that I noticed that these shells were identical to my three specimens of *L. bonnieae* from Oman. I conferred with Martin Snyder, my Fascioliariidae mentor, and he confirmed my identification of *L. bonnieae*, and he also had Somali specimens from the following locations: trawled off Mogadishu in 1991 (38.9mm) and trawled off Cape Ras Hafun in 1994 (35.1mm and 42.8mm).

500 Nottingham Parkway, Louisville, KY 40222

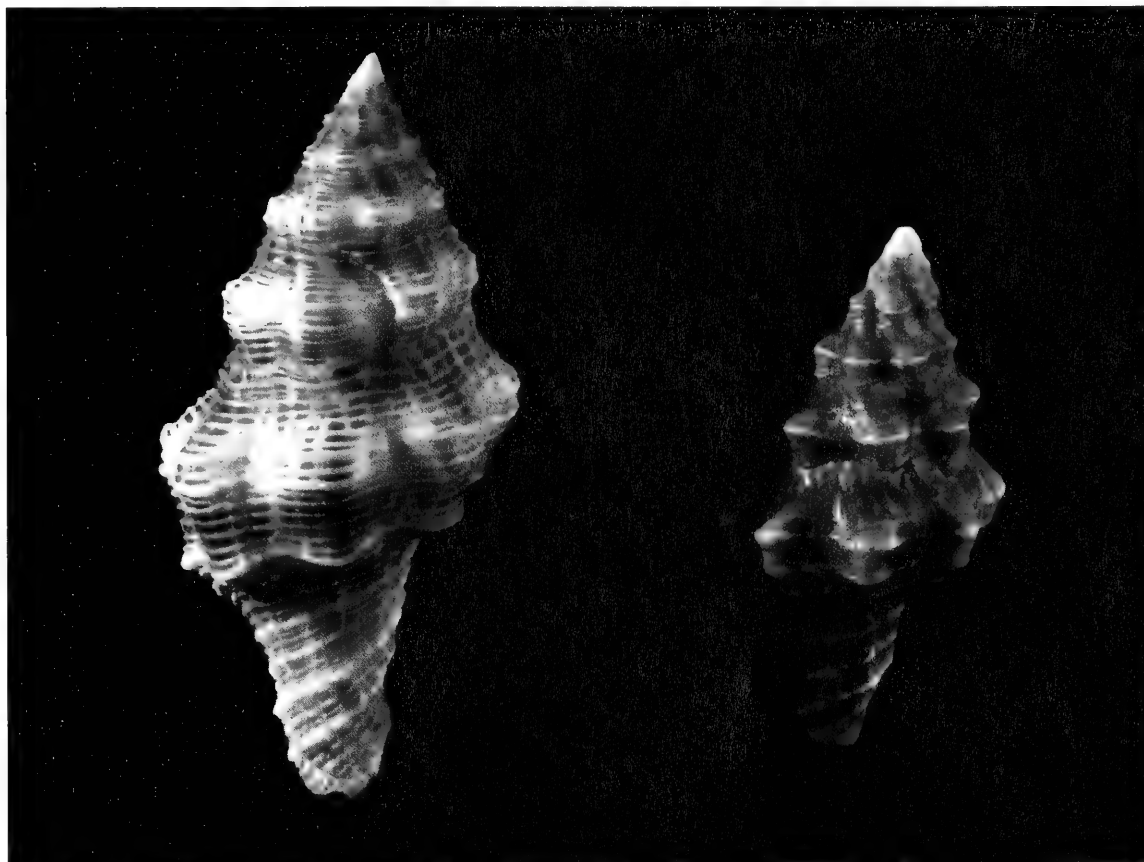


Photo by Kevan Sunderland

Left: *Latirus polygonus barclayi* Sipadan Island, Borneo, Celebes Sea. 65 mm.
Right: *Latirus bonnieae* Masirah, Oman. 46mm with periostracum.

WITH THE CLUBS by Gene Everson

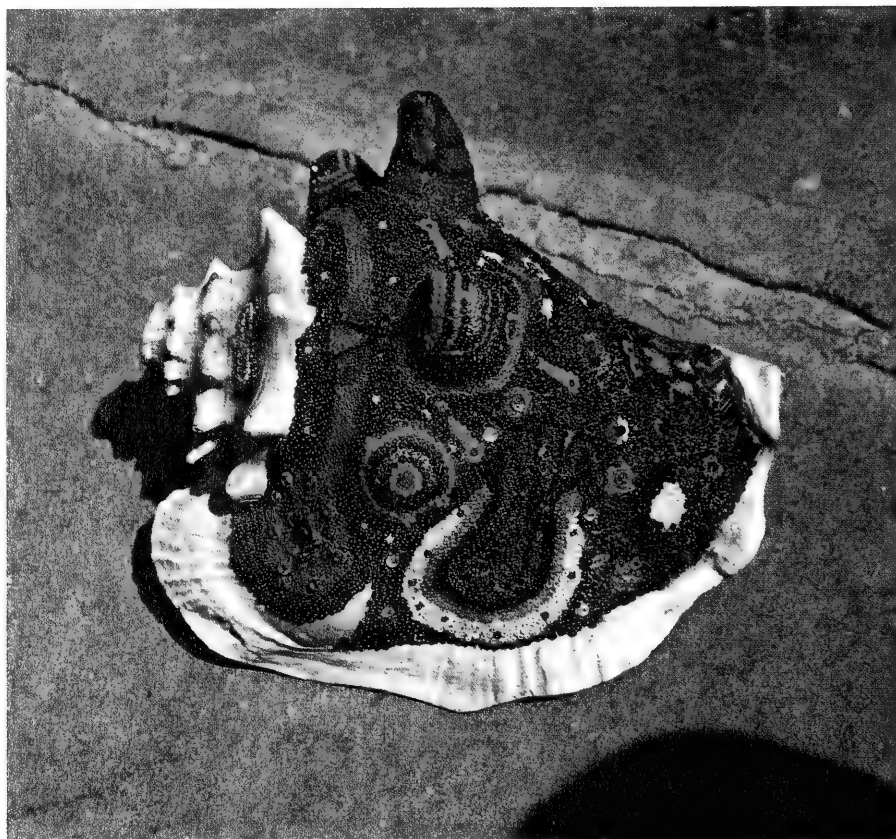
Clubs making a difference:

National Capital Shell Club donated \$500 this year to Astro-labe, Incorporated. This worthy, non-profit organization in Washington D.C. was formed for the purpose of studying and protecting the endangered tropical reefs of the world.

The **Northern California Malacozoological Club** gave the 1994 \$500 NCMC Research Grant in Malacology to Mario Tamburri from the University of South Carolina. Tamara Ross of Iowa State University was the recipient of the Student Research Grant in Malacology. (No dollar amount was specified.)

The **Sanibel-Captiva Shell Club's** grant to the University of South Florida resulted in an article describing a new species of foraminifera and documenting the first evidence of predation by one foraminifera species upon another. On some Pacific atolls, more than 90% of the sand is foram shells. (For more information see the July 1994 **Junonia**, publication of the Sanibel-Captiva Shell Club.)

SHELL ART FROM SOUTH OF THE BORDER



Charlie Glass sent this amazing photo several years ago. It kept waiting "in the file" for just the right moment, and Christmas, 1994 seems to be that moment. According to Charlie, it reminded him "of some of those old pre-columbian Mexican mosaic masks!" The conch was decorated by a Guanajuato artist, Alina Monterubio, and he asks that we include her address and phone number for any COA member interested in her work: Callejón 15, San Miguel de Allende, Gto., Mexico (tel: 011-52-465-22021). we hope that information is still current.

THE CRIMINALIZING OF SHELL COLLECTING...

(continued from page 3)

material. Will it eventually be returned to the rightful owner, or destroyed?

I am working as a taxonomist in entomology, and I frequently need to borrow holotypes from many different museums in the process of describing new species. I am extremely concerned about the possibility that some museum's types could be seized or mishandled during customs examinations.

Up to now no single source of information has been available to the avocational collector concerning these regulations and the permit processes. **ISCA** proposes to act as a clearinghouse to provide such information. They also propose to represent the viewpoint of scientists on all legislative proposals having impact upon scientific research. **ISCA** supports the necessity of scientific collecting and systematic collections for scientific research. **ISCA** would like to recognize the achievements made by amateur natural history scientists, because today it seems to have become fashionable to minimize the contributions made by the so-called "amateur" or "avocational" worker; it seems nearly forgotten that virtually all of the great pioneer natural scientists — Audubon, de Selys-Longchamps, Fabricius, Linnaeus, Rambur — were amateurs.

ISCA solicits your support and membership. Annual dues are \$15.00 for regular membership (\$25.00 or more for contributing membership). For information contact Carl Cook, Executive Director **ISCA**, 469 Crailhope Road, Center, KY 42214 (phone 502-565-3795).



Werner Massier of Margate, Natal, South Africa sent us this photo of two *Cypraea coronata* (Schilder, 1930) of most unusual sizes. he says, "They represent the largest and the smallest I have come across. The beautiful dwarf (variety tuberculata) being 22.7mm and the giant 36.6mm. Both shells exceed the maximum and the minimum measurements given in Lorenz's book considerably."



OUR COA CLUBS — A CLOSER LOOK

by Nancy Gilfillan

Pacific Shell Club

During the World War II years (1942-1945), nearly every day someone would come to the Los Angeles County Museum of Natural History and get permission to go to the third floor to have Dr. Howard R. Hill, Curator of Marine Biology, name the shells which the wives, children, or sweethearts of the men in war service had received from someplace in the South Seas or other areas in the world. There were so many requests that Dr. Hill knew that a new shell club should be organized so that there would be a place where beginners could come regularly to learn about shells.

During the fall of 1943, the first Marine Life Class was formed with Dr. Hill as instructor. It consisted of 16 boys and girls, outstanding students recommended by junior and senior high schools in the area. By January 1944, it was time to organize a new club, thereby named "The Junior Shell Club"; as Dr. Hill defined it, members could be from eight to eighty. In June 1945, the club members thought they had learned enough about shells that they could change the name to "The Pacific Shell Club," the name it bears today.

Due to Dr. Hill's considerable influence and enthusiasm, some of his former students have gone on to take some branch of natural history as their life's work — as specialists, educators, or serious hobbyists — for instance, Crawford Cate, Twila Bratcher, Dr. James McLean, Roy Poorman, Dr. Donald Shasky, Dot and Bill Myhra, Bob Hawley, Orval and Evelyn Blake, Fern Anderson, Rose Burch, Lois Van Deventer, Ralph and Marjorie Hall, Martha Dippell, Margaret Chavannes, Pamela Gates, Glen and Pearl Snyder, Alberta Jones, and Grace and Ed Forbes. As a matter of fact, Dr. McLean,

the current sponsor of the club, is the Curator of Invertebrate Zoology at the Museum.

The club publishes its monthly newsletter, *Las Conchas*, each month the club meets. It carries on its masthead the club's logo shell, *Kelletia kelletii* (Forbes, 1850), Kellet's Whelk. Both genus and species names honor Captain Sir Henry Kellet (1806-1875), commander of a British naval surveying expedition along the Pacific coast of the Americas. The club also offers its logo on patches, pins, and windshield stickers.

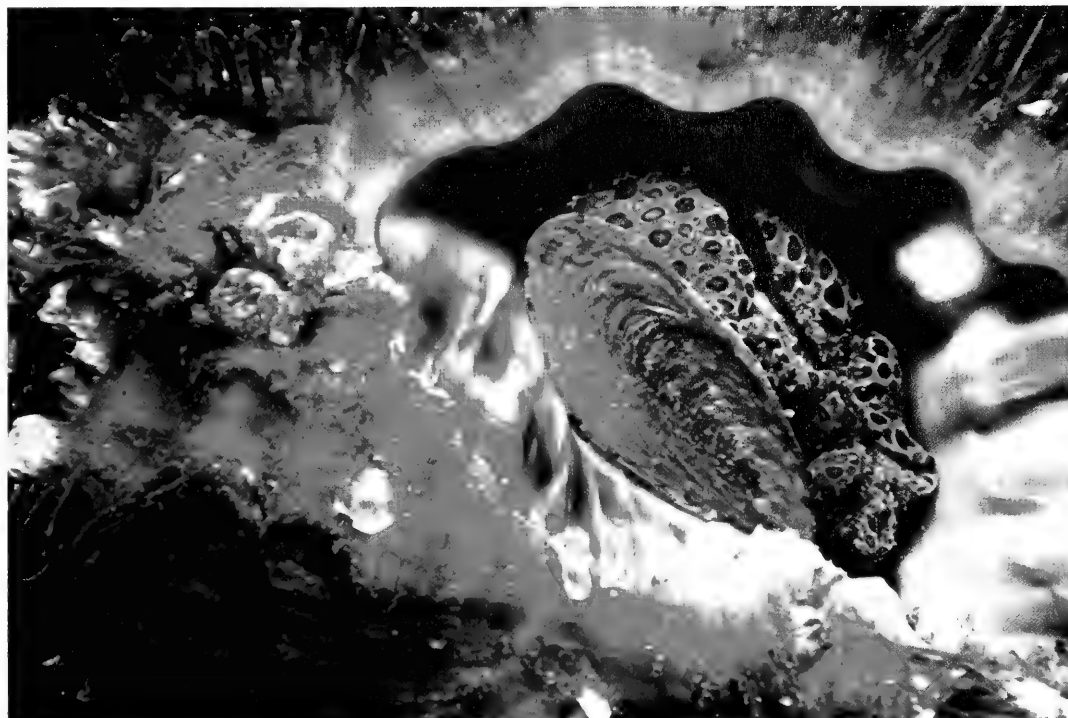
The club meets the first Sunday in October through June, 1:30 to 4:00 p.m. at the Coast Federal Savings Bank, 1001 Pacific Avenue, San Pedro, California. This past year the bank has been doing some reconstruction, and it was not definite whether the bank would be ready for the club by fall. If you are in the San Pedro area and wish to attend one of the meetings, call President Dave Nesheim at (310) 541-1568 to be sure where the meeting is being held. Membership dues are \$5.00 single and \$8.00 family. Send your check, made payable to the Pacific Shell Club, to Judy Kirkup, 1333 Via Margarita, Palos Verdes Estates, CA 90274.

On May 1, 1994, the Pacific Shell Club mounted their first shell show; this is especially impressive when one realizes that most of the members had never even attended a shell show! Twila Bratcher judged, top awards were given for scientific exhibits, and the show was such a success that the club has already scheduled their next shell show on May 7, 1995.

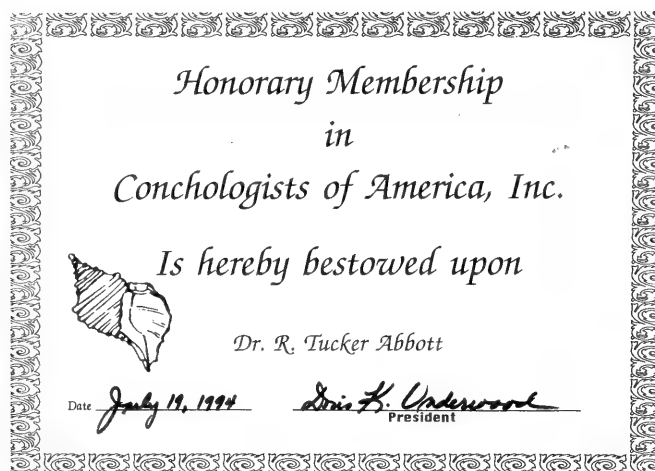
Congratulations!

9922 Edward Avenue, Bethesda, MD 20814

WHAT ON EARTH IS IT?



Why, a Steve Barry photo, of course. It was taken in 70' of water on an artificial reef off Panama City, Florida using Nikonos V w/1.2 mac using Fujichrome 100, and it is another one of those head-on views. This one is a close-up of the aperture and operculum of a *Cymatium parthenopeum*. The black and yellow spotted part is the animal coyly withdrawing into its shell.



ABBOTT AWARDED HONORARY MEMBERSHIP

COA has conferred upon Dr. R. Tucker Abbott an honorary membership. Dr Abbott is the only honorary member COA has at present. (Founder John Paduano who passed away last January was the only other such honoree. See article, p. 11) Below are the text of the letter conferring honorary membership on Dr. Abbott and a copy of the certificate.

Dear Tucker,

It is a pleasure and a privilege to advise you that you have been elected to Honorary Membership in the Conchologists of America at our Annual Meeting in Corpus Christi, Texas July 19, 1994.

Your many years of dedicated, unselfish service to the Conchologists of America, to collectors, other organizations and clubs, and to the field of malacology make this award most deserved.

My sincere congratulations,
Doris Underwood
Past President, COA

In Memoriam

Elizabeth Dalrymple
Harold M. Gordon
Max McCowan
Mary Nix



Long time collectors will be saddened to hear of the death of LANCE MOORE, specimen shell dealer from Sydney, N.S.W., Australia. His demise was reported in the March-May 1994 **Keppel Bay Tidings**, Keppel Bay Shell Club, Queensland, Australia.



FLOWERS TO:

COA's members have been plagued with illness and surgery lately. Those of whom we've received notice are detailed below:

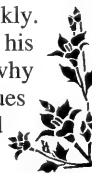
Get well wishes go to Allan Walker of Jacksonville, who suffered a stroke in early fall. Last word is that he is in a physical therapy program at a rehabilitation center, and he is making slow but steady progress, although speech is still difficult. He appreciates all the cards from well-wishers and feels they have aided in his recovery.

Ben Wiener also will have undergone heart surgery by the time you read this. We are thinking of you, Ben, and wish you a quick and easy recuperation.

Mary Brady of the Georgia Shell Club and Joan Koven of the National Capital Shell Club and Astrolabe both had major surgery recently. We hope all went well and wish you both a speedy recovery.

COA Board member John Baker has had shoulder surgery, is well on the mend, and has been doing physical therapy. Keep it up, John! Physical therapy beats pill therapy.

COA's own Walter Sage has also had some recent surgery (the day before Thanksgiving). He is recuperating with that same enthusiasm and vigor that are his trademark in all he does, so we know that he'll be up and around quickly. Just the same, we know he'll appreciate hearing from his COA friends. Get well soon, Walter. (Even better, why don't you put some real spirit into it? Send in your dues renewal along with that note or get-well card. It would certainly lift his spirits.)



PIN MONEY



From Lindsey T. Groves in Los Angeles comes the following:

"Good news for your 'pinhead' section of the **American Conchologist**: The Conchological Club of Southern California has a pin!! As the oldest shell collecting organization in the U.S., established in 1902, our new pin features our logo, *Euvola diegensis* (Dall, 1898) [or *Flabellipecten diegensis* or even *Pecten diegensis* if you prefer!]. Pins are available for \$5.00 each (+ 1.00 for postage) from our CCSC Corresponding Secretary (yours truly!) through the Natural History Museum of Los Angeles County, Malacology Section, 900 Exposition Blvd., Los Angeles CA 90007."

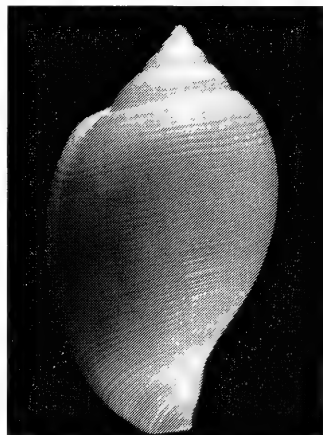
The pins are as pictured, with gold trim, lettering, and definition on a white ground with a navy blue border and a shell pink scallop. They make a worthy addition to the growing body of shell club pins. Order yours today!

ATTENTION FRESHWATER SNAIL COLLECTORS:

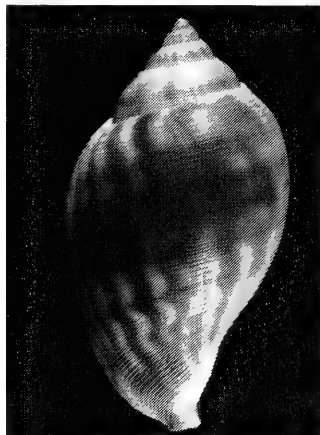
"The Prosobranch Snail Family Hydrobiidae (Gastropoda: Rissooidea): Review of Classification and Supraspecific Taxa" by Alan R. Kabat and Robert Hershler was published in **Smithsonian Contributions to Zoology** number 547 issued Oct 19, 1993. The Hydrobiidae are re-defined and differentiated from other rissooidean families, and a review of the classification of this family is presented. Particularly useful to the collector are a geographical and a stratigraphical index to the genera.

SPOTLIGHT ON CARIBBEAN SCONSLIA

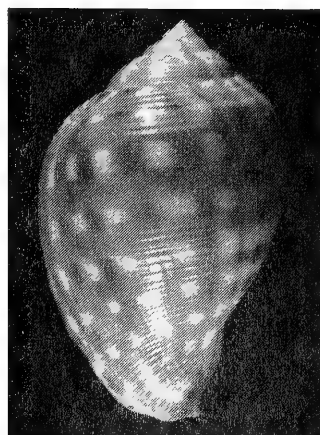
by Kevan and Linda Sunderland



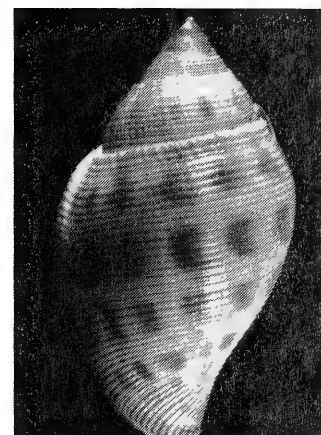
Sconsia cf. laevigata Sowerby, 1850. 200', Colombia.



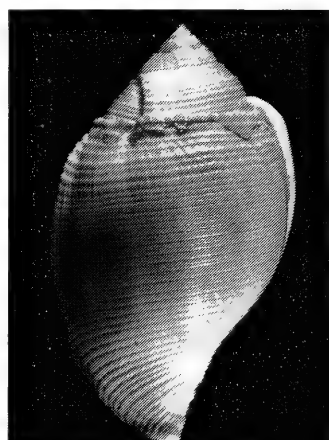
Sconsia lindae Petuch, 1987. 35 meters, Colombia.



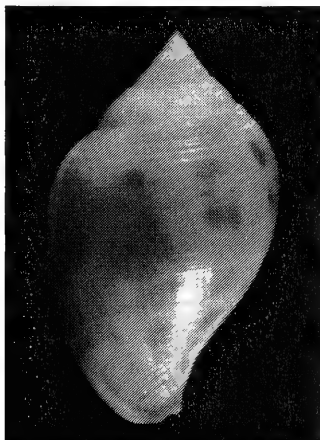
Sconsia nephele Bayer, 1971. 100', Guyana.



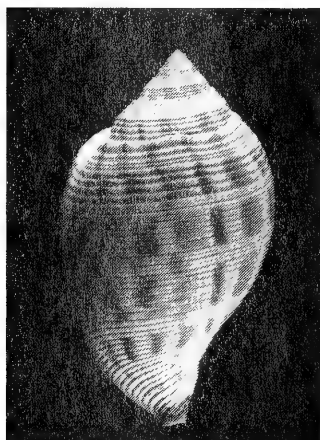
Sconsia striata (Lamarck, 1816). 350', Dry Tortugas.



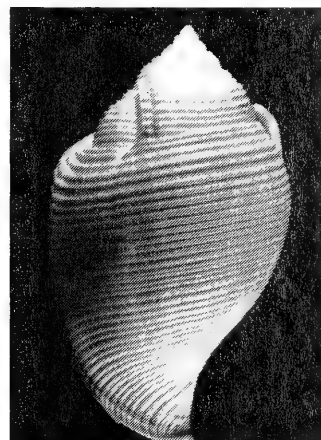
Sconsia striata (Lamarck, 1816). 450', Florida Straits.



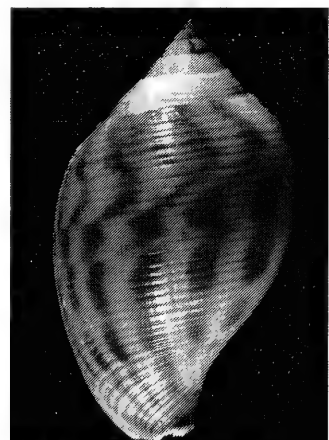
Sconsia striata (Lamarck, 1816). 800', Grand Bahama Island.



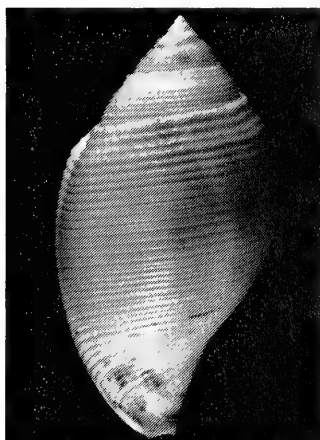
Sconsia striata (Lamarck, 1816). 400', Flower Garden Reef, Texas.



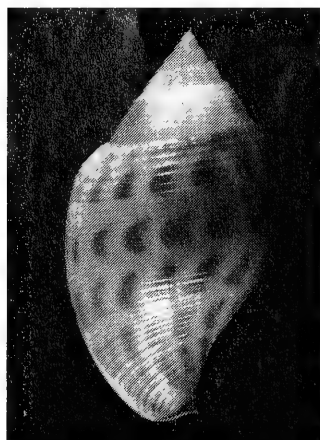
Sconsia striata (Lamarck, 1816). 350', Matanzas, Cuba.



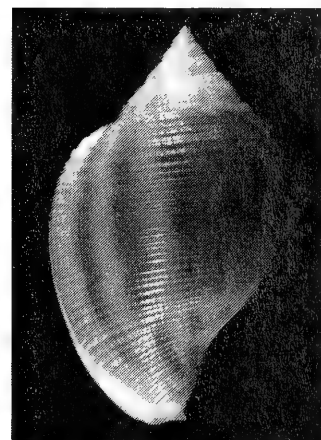
Sconsia striata (Lamarck, 1816). 600', N. coast of Jamaica.



Sconsia striata (Lamarck, 1816). 20 fathoms, Cabo Catoche, Bay of Campeche, Mexico.



Sconsia striata (Lamarck, 1816). 90 fathoms, St. James, Barbados.



Sconsia striata (Lamarck, 1816). Northern Brazil. EX Finn Sander Coll'n.

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EVOLUTION OF COCKLES... (continued from page 4)

cladistic studies of various bivalve groups have only begun to appear more recently (Bieler and Mikkelsen, 1992; Schneider, 1992). Most cladistic studies are now carried out with user-friendly, flexible computer programs such as PAUP (Swofford, 1993) and Hennig86 (Farris, 1988). These programs allow the student to tailor the analysis to one's own data and scientific philosophy.

But what does all this have to do with the subject at hand, namely, the evolutionary history of cockles? Well, all those different shell shapes, ribbing patterns, ornamentation, hinge tooth shape and arrangements provide characters to be considered in the analysis. Furthermore, within the Cardiidae there are differences concerning the posterior margin, lunule, muscle scars, and other conchological features. Additionally, I undertook an anatomical survey of the cardiids: I studied the anatomy of the gills, labial palps, stomach, intestines, siphons, tentacles, foot, and other structures. Except for a few well-known species like the edible cockle *Cerastoderma edule* (Linné, 1758) and the Pacific basket cockle *Clinocardium nuttallii* (Conrad, 1837), most cardiids had never been studied anatomically.

The cardiids have been the subject of considerable taxonomic study, especially by Myra Keen (1969, 1980), Alexander Kafanov and Sergei Popov (1977), and more recently in a series of papers by R.P.A. Voskuil and W.P.H. Onverwagt (for instance, see Voskuil and Onverwagt, 1989, 1991; see Schneider, 1992, for a full list of taxonomic references). Keen recognized the cardiid subfamilies Cardiinae, Protocardiinae, Fraginae, Trachycardiinae, and Laevicardiinae (Fig. 1). The only evolutionary reconstruction suggested by Keen is a written description (see Fig. 2). Kafanov and Popov made the only detailed attempt to reconstruct the evolutionary history of cardiids (Fig. 3). Kafanov removed some of the members of Laevicardiinae and erected the subfamily Clinocardiinae (see Kafanov, 1980). Kafanov and Popov's analysis is based on two "key characters": shell microstructure and stomach anatomy. I have reinvestigated both shell microstructure and stomach anatomy, as well as the numerous conchological and anatomical features mentioned above. In all, I used 54 characters (34 conchological and 20 anatomical) with 170 character states in my preliminary analysis.

Traditionally, the family Cardiidae has been placed in the superfamily Cardioidea with two other families (Figs. 4A-B): 1) Lymnocardidae, which contains the brackish-water cockles of the Black, Caspian, and Aral Seas, and 2) Lahillidae, an extinct group that lived in South America, Antarctica, New Zealand, and Australia during the Cretaceous and early Cenozoic. Lamarck (1809) was the first to suggest that the giant clams were allied with the cardiids. Most authors today place the giant clams (Fig. 4C) in their own superfamily Tridacnoidea. This existing classification scheme was not taken for granted — indeed, it was one of the things that I wished to test with my analysis — and representatives of all these groups were included in my study.

There are about 180 available generic names for the Cardioidea, about half of them for Lymnocardidae, which were tremendously diverse — although geographically restricted — during the Miocene and Pliocene. Therefore, as a preliminary study (Schneider, 1992), I chose 36 genera and subgenera, with the purpose of including at least one representative of each kind of the cardiid subfamilies accepted by Keen (1969) and Kafanov and Popov (1977). One species, usually the type species, was used to represent each of these genera and subgenera. Some authors (such as Keen) have derived the Cardioidea from the Carditoidea. Therefore, the Carditoidea was used as the **outgroup** in this analysis. In cladistic analysis, the outgroup is the closest relative to the group being studied, which is called the **ingroup**; therefore the ingroup in the analysis would be all the members of the Cardioidea considered

together. The results of my analysis are presented in Fig. 5.

The subfamily Protocardiinae has been understood to include the extinct genera *Protocardia*, *Integricardium*, and the living genus *Nemocardium* (Keen, 1969, 1980). However, the present results indicate that this is not a natural group. *Integricardium* is more closely related to *Lahillia*. *Nemocardium* (Fig. 4D) is more closely related to the living genera *Laevicardium* and *Fulvia*, although I presently decline to classify *Nemocardium* in the subfamily Laevicardiinae. The remainder of the ingroup contains those forms that have been classified in the taxa Cardiinae, Trachycardiinae, Fraginae, Lymnocardidae, and Tridacnoidea. Members of the Cardiinae and Trachycardiinae form one large subgroup, and the remaining forms constitute a second large subgroup. Amongst this second subgroup is *Clinocardium*

(Fig. 4E), which Keen had placed in the Laevicardiinae. Kafanov has argued that Keen's arrangement of the Laevicardiinae is polyphyletic; that is, it does not constitute a single lineage but rather contains members from several different lineages. A polyphyletic taxon contains groups that are not each other's closest relatives, thus defeating the purpose of the taxonomy itself. Kafanov removed *Clinocardium* and *Serripes* from Laevicardiinae, and erected the subfamily Clinocardiinae for these forms. My results support his work in this respect. Keen considered *Dinocardium* to be a subgenus of *Laevicardium*, but both Kafanov and I have found *Dinocardium* to be a member of the Cardiinae. Keen had also placed *Cerastoderma* in the Laevicardiinae. However, my results indicate that it is more closely related to the brackish-water cockles, as

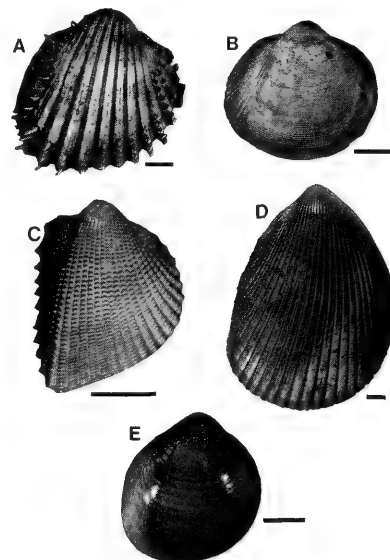


Figure 1. Representatives of the five cardiid subfamilies recognized by Keen (1969). All valves are right valves. All scale bars equal 1 millimeter.

- A. *Acanthocardia aculeata* Linné, 1758). Recent, subfamily Cardiinae, type species of *Acanthocardia*. ANSP (Academy of Natural Sciences, Philadelphia) #54235.
- B. *Protocardia hillana* (Sowerby, 1813). Early Cretaceous of England subfamily Protocardiinae, type species of *Protocardia*. ANSP #336497.
- C. *Fragum fragam* (Linné, 1758). Recent, subfamily Fraginae, type species of *Fragum*. ANSP #288688.
- D. *Acrosterigma dalli* (Heilprin, 1887). Pliocene of Florida, subfamily Trachycardiinae, type species of *Acrosterigma*. ANSP #36461.
- E. *Laevicardium laevigatum* (Linné, 1758). Recent, subfamily Laevicardiinae. ANSP #326257.

Kafanov and many other eastern malacologists have long thought. Other members of this group are the subfamily Fraginae and the giant clams, now considered the subfamily Tridacninae.

The taxa Lahilliidae, Lymnocardiidae, and Tridacnoidea should be considered SUBFAMILIES within the family Cardiidae: Lahilliinae, Lymnocardiinae, and Tridacninae. Finlay and Marwick (1937) originally proposed Lahilliinae as a subfamily, and many eastern malacologists have for years been referring to the brackish-water cockles as subfamily Lymnocardiinae. Leaving these groups as separate higher taxa leaves an arbitrarily amputated Cardiidae that contains only some, but not all, the descendants of a most Recent common ancestor. The Cardiidae would be defined not by what they are, but by what they are not! We would have the same situation as if we named a taxon for all the non-flying mammals, or a taxon for all the mammals excluding those with retractable claws. Furthermore, it is much more interesting to consider the lahillines, brackish-water cockles, and giant clams as morphologically distinct members of the Cardiidae, rather than separate groups, locked away in separate cabinets, removed from their evolutionary context.

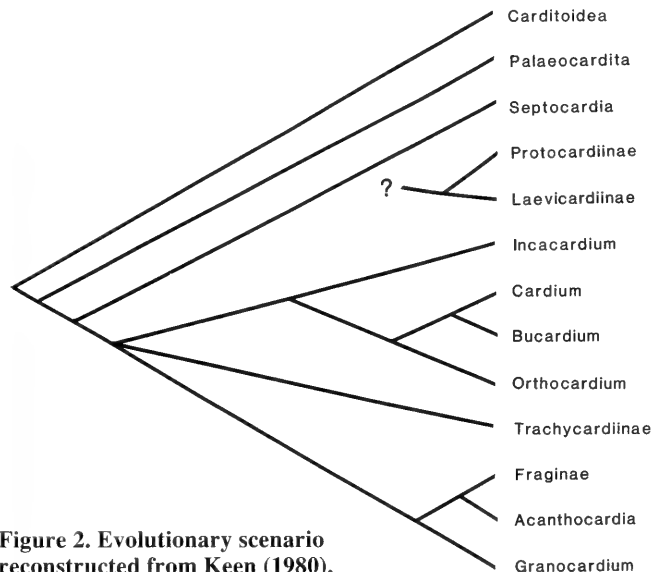


Figure 2. Evolutionary scenario reconstructed from Keen (1980).

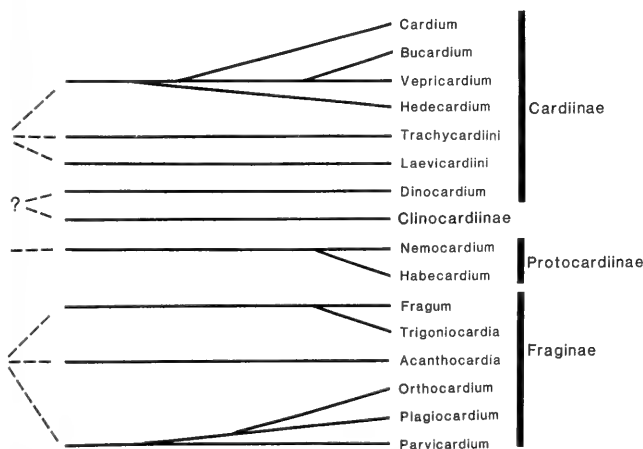


Figure 3. Evolutionary scenario from Kafanov and Popov (1977). Only those taxa considered by Schneider (1992; see Figure 5) are included.

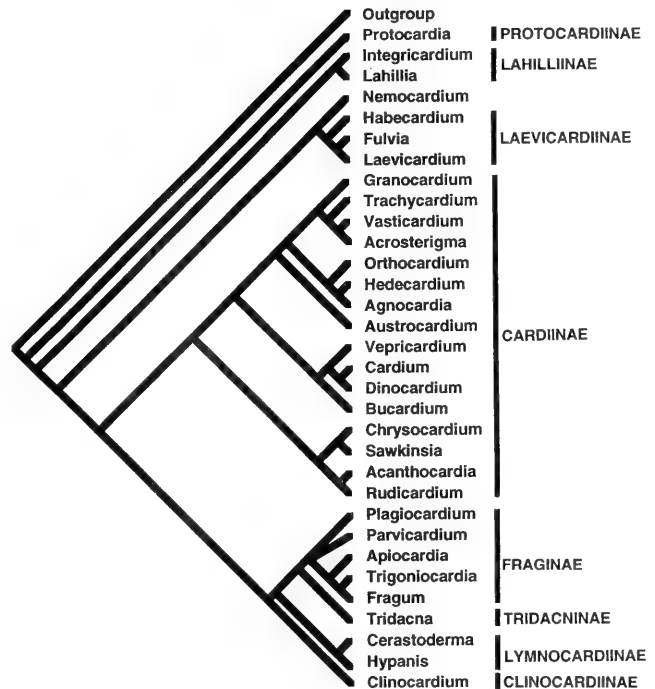


Figure 5. Results from preliminary cladistic analysis (Schneider, 1992)

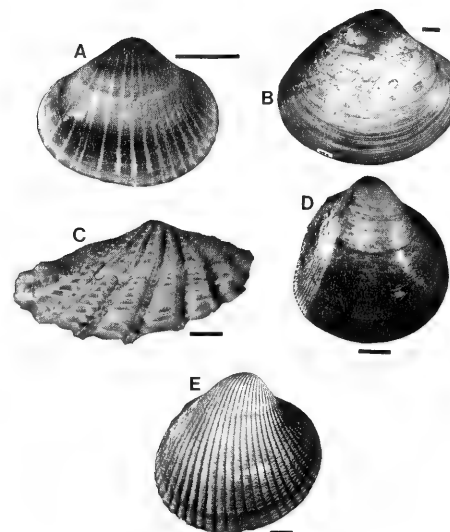


Figure 4. Additional representatives of important cardiid lineages. All valves are right valves. All scale bars equal 1 millimeter.

- A. *Monodacna (Hypanis) colorata* (Eichwald, 1829). Recent, subfamily Lymnocardiinae. ANSP #338065.
- B. *Lahillia wilckensi* Zinsmeister, 1984. Eocene of Antarctica. United States National Museum #365500.
- C. *Tridacna maxima* (Röding, 1798). Recent, subfamily Tridacninae. ANSP #252683.
- D. *Nemocardium bechei* (Reeve, 1847). Recent. ANSP #252661.
- E. *Clinocardium nuttallii* (Conrad, 1837). Recent, subfamily Clinocardiinae, type species of *Clinocardium*. Field Museum of Natural History #278051.

EVOLUTION OF COCKLES... (continued from page 19)

Acknowledgements

I would like to thank the Conchologists of America for awarding me a research grant in 1990 to assist me in my studies of cardiid evolution. Numerous other agencies and individuals have also aided my research; these are listed in the acknowledgements of Schneider, 1992 and 1993.

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OOPS!

The Convention photographs in the September issue of *American Conchologist* somehow managed to appear without photo credits. Our apologies to Convention Photographer Jerry Clampit who followed us around tirelessly and diligently. Anyone who stuck his head up above the rest of us was sure to see the glare of Jerry's flash, illuminating his moment of daring. And the photos were excellent ones. So we're including some more of them in this issue for your enjoyment. We also include a few by Chris Takahashi of Hawaii who always remembers *American Conchologist* in its need and sends us a sample of his convention portfolio. Thanks, both of you, and sorry about the omission last issue.

CAN THE GREAT BARRIER REEF REALLY PREVENT SKIN CANCER?

With all we keep hearing about the Ozone Hole and the harmful effect of the sun's rays on our skin, it comes as a largish shock to learn that ever-vigilant science has determined that, all those SPF numbers to the contrary, our sunblock lotions are not doing the job we hired them for...they're no longer considered effective as protection against the ultra-violet radiation in sunlight. So it was with a measure of relief that we read in an old issue (July 1992!) of the *Central Florida Shell News*, who got it from *Reader's Digest* who got it from *Longevity Magazine*, that Australian scientists have found a component of algae which may in fact do the job Coppertone flubbed.

They've discovered an amino acid in the symbiotic algae that lives inside coral on the Great Barrier Reef. This amino acid is able to absorb ultraviolet radiation from the sun. Its function in nature is to protect the live coral from damage by the sunlight, but the easily-synthesized substance may prove capable of blocking the UVB rays that burn our skin and cause skin cancer. Come to think of it, given the delay factor in editorial reading of late, the stuff may already be on the market! Anyway, WOW! You know how we always hear that we need to take care of our natural world, the rainforests and such, because Nature may have hidden there the cure for cancer and a host of other ills that plague mankind? Well, here we have the Great Barrier Reef nestling to its bosom a possible preventative for malignant melanoma.

FRENCH SHELL SHOW SCHEDULED IN FEBRUARY

The Association Française de Conchyliologie announces its International Shell Show to be held February 4th and 5th, 1995. The show will be open from 10 a.m. to 6 p.m. at the Espace d'Animation des Blancs Manteaux, 48, Vielle du Temple, 75004, Paris. For more information write to M. and D. Wantiez, 88, Rue du Général Leclerc, 95210 Saint Gratien, France, or telephone: (1) 34 17 00 39.

CAPTIVA SHELL SHOP DESTROYED BY FIRE

A fire charred and gutted the inside of the "She Sells Sea Shells Store" during the morning of August 13th....The store's owners, Anne and David Joffe, were out of the country when the fire happened. —Sanibel-Captiva Island Reporter 8/19/94

COA LOGO CONTEST

TITLE: A NEW LOOK FOR A NEW CENTURY

PURPOSE: Design a new logo for COA, incorporating official name: **Conchologists of America, Inc.** and the logo shell: **the COA Neptunea**

This logo will be used for letterheads and for the official masthead of the *American Conchologist* after January 1996.

To submit:

Use any form of **Black and White** presentation, pen and ink, pencil, etc. **No color.**

Must use Neptune shell (a copy will be sent on request).

Must use wording: **Conchologists of America, Inc.**

Mount on 8 1/2 X 11" cardstock or mat board.

Submit by **March 1, 1995** to:

Publications Director Betty Lipe
440 75th Avenue, St. Petersburg Beach, FL 33706

Top five entries (selected by the Board of Directors) will be printed in the June 1995 *American Conchologist*. They will be displayed at the San Diego Convention and will be voted on by the members present at the convention.

OF MOLLUSCS AND WOMEN... (continued from page 4)

such fields as economics and biology to test hypotheses regarding short- and long-term benefits of a given strategy.

In line with evolutionary theory, some biologists have proposed that animals will forage in a manner that maximizes fitness at the individual level. In a similar fashion, fellow anthropologists suggested that people will adopt most readily those behaviors that contribute to their survival and reproductive success. In recent years, models seeking to demonstrate the economic rationality of food acquisition, OPTIMAL FORAGING MODELS, have been applied to a growing number of anthropological case studies. Despite criticisms, it was hinted that foraging models could be more relevant to human foragers than to other species precisely because of the ability among humans to process vast amounts of information about the environment to guide them towards the most efficient use of available food sources (Smith 1983 and references therein).

OPTIMAL FORAGING MODELS operate under the assumption that animals, including humans, choose food types that maximize their net rate of energy or nutrient intake. The optimal diet is generally determined by considering the caloric value of each prey item, the rate of encounter, and handling time (Pyke, 1984). For example, mollusc species are ranked according to their profitability. Beginning with the most profitable species (which is always included in the diet), prey are added to the diet, one by one, until a

prey item is found that has a lower return rate upon encounter than could be obtained from searching for more profitable prey. Upon encounter with such a prey type, human foragers could do better by ignoring it and all those less profitable, and continuing the search for types more profitable.

The islands of Kiribati are often described as marginal, both in the size of habitable landmass and in the distribution of resources. The surrounding ocean, however, provided and continues to provide a steady supply of nutrients, particularly protein. The large concentration of food available to a wide range of organisms along the equatorial belt enables the proliferation of an amazingly rich and abundant marine life.

I decided to tackle my subject using a three-prong approach with OPTIMAL FORAGING as a theoretical guide. My research therefore included ecological, ethnographic, and archaeological components. This report is concerned with the first two approaches. A more detailed description will follow at some future date when my archaeological material — the shells excavated from ancient refuse piles — is thoroughly examined and compared to my behavioral observations among contemporary mollusc gatherers.

Suffice it to say that molluscs readily lend themselves for studying the type of predator-prey associations proposed in OPTIMAL FORAGING MODELS. Bivalves and gastropods are quite durable in archaeological contexts where the soil is characteristically low in acidity (acid in the soil is often responsible for poor state of bone and shell preservation). Moreover, shells are easily identified to the species level, unlike fish remains. In short, they represent a type of resource whose uses can be assessed centuries after they were collected.

A survey of the anthropological literature revealed that mollusc gathering is largely monopolized by women and sometimes their dependents. This I found to be true also in Kiribati. Shell gathering had received scant attention, however, owing to the fact that the majority of anthropologists were males who focused primarily on male-oriented activities like fishing. This bias is also reflected in early travellers' descriptions (Des Rochers 1992; Moss, 1993). My research was therefore a constant source of amusement among the I-Kiribati women with whom I interacted. These women were also excellent cooks, and



Fig. 1: Collecting *Asaphis violascens* on the ocean reef flat near Kariatebike, Abemama. Photo by Frank Thomas.



Fig. 2: Example of a mixed catch from North Tarawa lagoon. One recognizes *Anadara* cf. *antiquata*, *Trachycardium angulatum* (Lamarck, 1822), *Spondylus squamosus*, *Barbatia velata* (Sowerby, 1843), and *Oliva miniacea* (Röding, 1798). Photo by Frank Thomas.

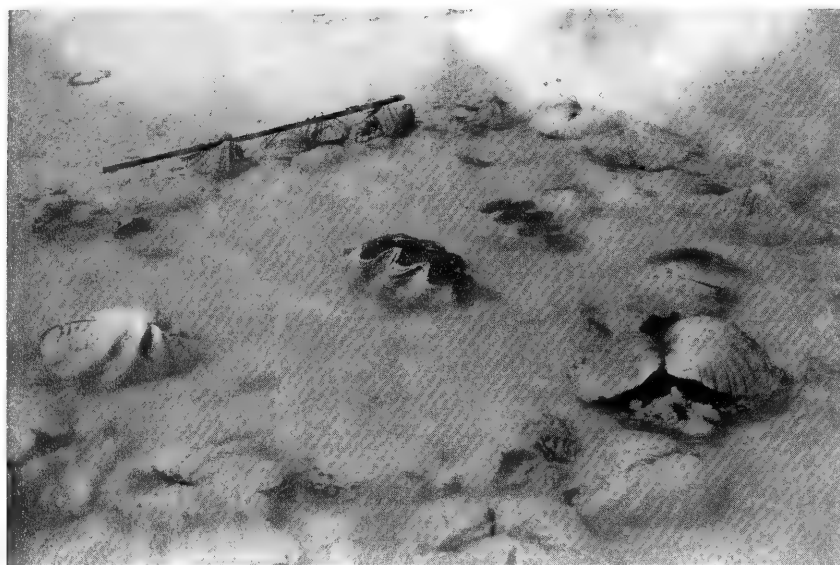


Fig. 3: Giant clam "garden," Abatiku, Abemama with *Tridacna gigas* and *Hippopus hippopus*. Photo by Frank Thomas.

even simple recipes involving the addition of onions and cabbage to a seafood dinner would undoubtedly compare with dishes served at the finest restaurants.

For the Pacific in general and Kiribati in particular, there were few comprehensive studies of mollusc gathering which could be utilized as a baseline for my work. A notable exception was Meehan's (1982) research among contemporary Australian Aborigines. Buchanan's (1988) work at Elands Bay in South Africa incorporated OPTIMAL FORAGING THEORY to assess the importance of molluscs on the area's prehistoric economy. Both Meehan and Buchanan compiled biochemical data for nutritional purposes.

Upon my return to Honolulu, I proceeded to measure the amino and fatty acid content of 21 mollusc species collected from Abemama and Tarawa (Thomas et al. In prep.). Of the 21 species identified, only one, *Cypraea tigris* (Linné, 1758), appears to be excluded from the local diet. Many I-Kiribati claim that the animal is poisonous. Tests were subsequently conducted at the University of Hawaii whose results showed the presence of a highly toxic lipid of low molecular weight of unknown origin, possibly associated with ingested sponges (cf. Kay 1985). *Cypraea tigris* is consumed elsewhere in the Pacific. For instance, Spennemann (1993) reports its use in Tonga as a source of raw material for various traditional tools — octopus lures, net sinkers, and breadfruit peelers — and states that its flesh is eaten.

Whether the feeding habits of *Cypraea tigris* differ at various localities is not certain. It is also possible that these molluscs become a hazard only at certain periods, much like ciguatera fish poisoning, and that all sponges or other organisms in a designated environment are not equally affected. Trial and error likely played a role in Kiribati for its people to consistently reject this shell.

My research also led me to explore the issue of resource management and how this behavior contrasts with the assumption of FORAGING THEORY which states that foragers will seek to satisfy their short-term goals. I hypothesized that traditional atoll communities are more keenly aware of resource limitations and that expressions of a conservation ethic, e.g., temporary food taboos, developed over the centuries to ensure adequate supplies in times

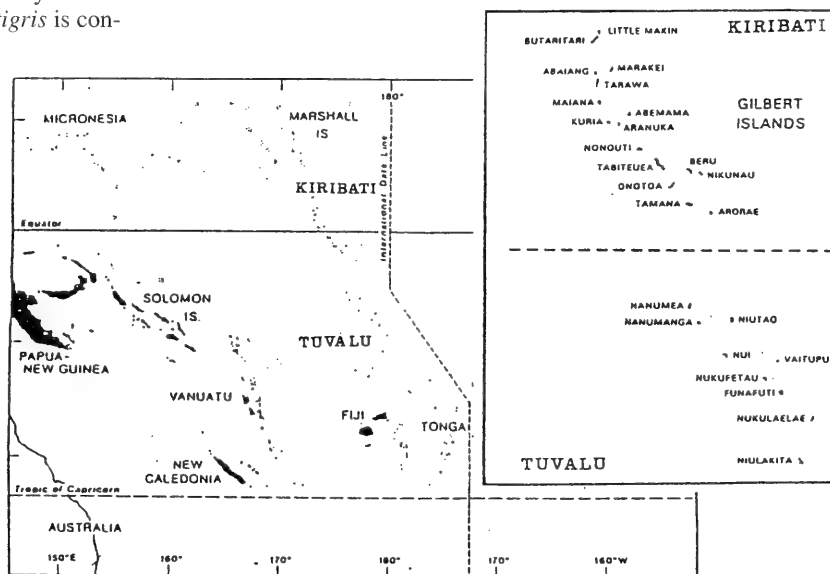
of scarcity (cf. Zann 1985). However, as Swadling (1982) indicated in her New Guinea study, the absence of traditional conservation policy there could be attributed to low population density whose impact on the environment did not lead to over-exploitation.

I found little evidence of conscious or planned management of molluscs. Two noteworthy exceptions involved the gathering of giant clams, *Tridacna gigas* and *Hippopus hippopus* (Linné, 1758) to transfer them to shallow water on the lagoon reef flat adjacent to households and to allow them to grow there. Incidentally, empty shells of *Tridacna gigas* are still widely utilized as feeding and drinking basins for pigs. In the past, giant clams provided the

raw material for tools such as ax and adz blades for various wood-working tasks in the absence of stone (Koch, 1986).

The practice of harvesting giant clams does not appear to be widespread, in part linked to the risks associated with collecting *Tridacna gigas*. "Wild" clam diving presents numerous hazards, including the risk of getting a foot or hand caught between the valves of animals measuring up to 1 meter in length. Giant clams are also more sparsely distributed than other species (Tekinaiti 1989), and handling time in prying the valves apart is longer if one is not successful in severing the adductor muscle on the first attempt when the animals still rest in deep water. Diving for *Tridacna* is a men's task, in contrast to the gathering of the majority of molluscs, which is done by women and sometimes children.

The people I interviewed claim that giant clams are harvested only when all other animal resources become unavailable. They can harvest the clams at any time, but they choose not to. They are in fact paying short-term costs for a long-term gain (cf. Alvard, 1993).



The Southwestern Pacific and the Gilbert Islands. [From L. Zann]

OF MOLLUSCS AND WOMEN... (continued from page 22)

Like fishtraps, clam "gardens" are privately owned. In all other cases, the reef flat on both lagoon and ocean sides is regarded as common property. Nevertheless, common property resources do not necessarily result in open access to each and every one (Berkas et al. 1989). It is clear, however, that the western notion of public rights to the sea and its resources, with ownership vested in the state, has certainly created a host of problems in modern-day Kiribati, as reflected in over-fishing and the depletion of the supply of certain molluscs, in part related to human population growth and migration from the outer islands to the capital on Tarawa.

The "domestication" of resources, including giant clams, is not the only means for ensuring sustainable yields. Searching for prey in different areas as a consequence of declining yields, PATCH SWITCHING, is a form of unintentional conservation enabling stocks to rebuild. This foraging strategy provides more immediate benefits than the process of "domestication" and appears consistent with most of my observations among contemporary reef gleaners.

Another factor which must be considered is a species resilience to various levels of exploitation. For example, stocks of *Strombus luhuanus* (Linné, 1758), an economically important gastropod on Abemama and Tarawa, have been shown to be highly resilient as a result of juvenile burying and subtidal distribution (Poiner and Catterall 1988). These molluscs are highly profitable to exploit in view of their clumped distribution and ease in collecting. Human foragers gather these shells by visually searching for exposed individuals in areas with mixed soft and hard substrata. Handling time entails boiling the shells to facilitate meat extraction, a task easily accomplished by small children. Also, my nutritional analyses place these conchs second overall after *Gafrarium pectinatum* (Linné, 1758). The latter are not as popular, however, perhaps because of their small size, but they still rank high on my list of 20 species considered edible.

While certain species are obviously preferred and targeted by the I-Kiribati, in many instances a mix of species is taken by those who forage for shells, especially when the designated prey is found to be too thinly distributed.

Anadara cf. *antiquata* (Linné, 1758) is the most abundant and favored mollusc in Kiribati. Although little is known about its larval biology and reproductive habits, offshore populations appear sheltered from human exploitation due to their relative inaccessibility, and consist of fairly large animals (Paulay 1992). When approached by a predator, an *Anadara* closes its valves, leaving a narrow line in the sand, thus facilitating detection. Individuals are eaten raw or cooked. Edible meat weight (average about 10 grams) exceeds the second most important species, *Strombus luhuanus* (average of less than 5 grams).

Gafrarium pectinatum was at the time of my investigations the prominent mollusc gathered by the people of Tebanga Village on Maiana Atoll. I often saw children collecting these small bivalves, simply scraping the sand and gathering large numbers of shells in a short time. The I-Kiribati boil the shells, extract the animals and eat them whole. Although the presence of extensive intertidal sand flats would make *Gafrarium* highly profitable to exploit, large *Anadara* shells were ubiquitous in the refuse piles adjacent to households, suggesting a preference for *Anadara* when these became more abundant and attained sizes exceeding the largest *Gafrarium*. Random samples from both Maiana and Abemama were measured and weighed for later comparison with findings from urban South Tarawa where over-exploitation of *Gafrarium* is strongly suspected.

The fourth most significant mollusc is the bivalve *Asaphis violascens* (Forskall 1775), restricted to the upper intertidal areas, particularly common in gravelly sands. Where it is abundant, I often saw throngs of women and children heading out carrying empty rice bags and armed with spoons. These ordinary kitchen imple-

ments served their purpose well when harvesting involved wholesale digging. In other instances people visually search for the siphonal openings. Handling time, however, exceeds the above-named species since large amounts of sand are found inside the animals. To extract the meat, they insert a knife between the valves, and after gutting, remove the sand and give them a final rinse.

From these preliminary results, it would appear that the I-Kiribati make quite rational choices within the context of mollusc gathering, even if they are unaware of the nutritional significance of their preferred species. Although I did not have the opportunity to quantify data from fishing and the capture of other invertebrates, qualitative observations showed that fishing provides the bulk of protein intake and no doubt supplies more calories overall (cf. Borgstrom 1962). However, shell gathering remains important, particularly during periods of inclement weather, and provides a steady return of protein accessible to all members of the community.

Acknowledgements

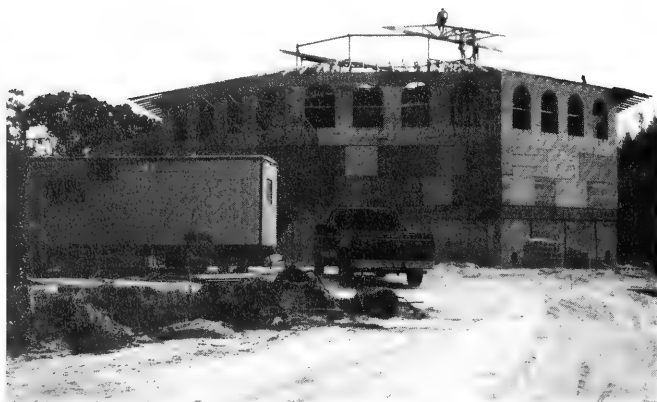
Fieldwork was made possible by a University of Hawaii Foundation Grant to Dr. Alison Kay (Dept of Zoology), a Grant-in-Aid of Research from Sigma Xi (#2719), and a COA Grant. Special thanks to Drs. Yoshitsugi Hokama (Dept. of Pathology), Harry Ako, and Mr. Darin Okuda (Dept. of Environmental Biochemistry) for the bioassays.

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SHELL MUSEUM UNDER CONSTRUCTION

by Bill Hallstead



Bailey-Matthews Shell Museum rises from the sand. This west elevation, photographed in early October, shows the exhibit hall side. The octagonal framework on top is the support for the cupola that will feature stained glass windows.

The long-awaited Bailey-Matthews Shell Museum is under construction on Sanibel Island, Florida. After years of effort to comply with federal, state, county, and city requirements, we began erection of the building in early summer with installation of its foundation: concrete pilings to meet flood zone requirements.

The 10,000 square-foot ground level space will be available for limited uses. The main floor will house the 72-foot diameter exhibit hall, a 150-seat auditorium, the museum shop, and offices. The top floor will contain a 6,000+ volume reference library, Shell Vision Bank of 20,000 35mm slides, and the reference shell collection.

Though the project has raised more than \$1 million, additional funding is sought for completion of exhibit fabrication and current operation of the museum's Preview Center. The need for additional funding has been necessitated, in part, by the city's requirement for the \$85,000 bridge at the site's entrance, newly imposed septic system requirements which quintupled the originally anticipated cost, and unexpectedly high site clearance costs.

A recent boost came from Japan, a \$10,000 grant by the Sumitomo Corporation. Earlier, the State of Florida assured building construction completion with a \$241,133 award from the state's Cultural Facilities Program. For information on gifts, call Tucker Abbott at (813) 395-2233. Also of significant financial help is membership income. With the museum to open in early 1995, memberships carry the privilege of free access. The general admission is expected to be \$3.00.

The museum Preview Center will be displaying the Fiji Collection of Raymond Burr, and will also be constructing a Raymond Burr Memorial Circle at the museum. Raymond Burr fans may personally express their affection for this great man by giving a \$100 brick to the project. (Shell Museum, P.O. Box 1580, Sanibel Island, FL 33957)

Congratulations go to **Steve and Tammy Barry** who were married August 5. Steve (with Tammy's invaluable assistance) was convention photographer at the 1993 Panama City Convention.

1995 WINTER & SPRING SHELL SHOWS & OTHER EVENTS

by Donald Dan, COA Awards Chairman

- Jan. 14-22 **Oregon Shell Show**, Portland, OR
Maxine Hale, 347 N.E. 136 Ave.
Portland, OR 97230 (313) 747-2193
- Jan. 21-22 **Astronaut Trail Shell Show**, Melbourne, FL
Jim & Bobbi Cordy, 385 Needle Blvd.
Merritt Is., FL 32953 (407) 452-5736
- Jan. 27-28 **Greater Miami Shell Show**, N. Miami, FL
Norris McElyea, 905 N.W. 15th Ave.
Miami, FL 33125-3625 (305) 642-1504
- Feb. 3-5 **Broward Shell Show**, Pompano Beach, FL
John Chessler, 7401 S.W. 7th St.
Plantation, FL 33317 (305) 791-5909
- Feb. 4-5 **V IIèmes Recontres Internationales du Coquillage**, Paris, France
Gilbert Jaux, 3 rue Saint-Honore
78000 Versailles, France (1) 39-53-80-46
- Feb. 10-12 **Ft. Myers Festival of Shells**, Ft. Myers, FL
Anna Marie Nyquist, 18372 Cutlass Drive
Ft. Myers Beach, FL 33931 (813) 466-6391
- Feb. 17-19 **Sarasota Shell Show**, Sarasota, FL
Peggy Williams, P.O. Box 575
Talleavast, FL 34270 (813) 355-2291
- Feb. 24-26 **Naples Shell Show**, Naples, FL
Gary Schmelz, 5575 12th Ave. S.W.
Naples, FL 33999 (813) 455-4984
- Mar. 2-5 **Sanibel Shell Show**, Sanibel, FL
Georgette Laforet, 1119 Periwinkle Way #176
Sanibel, FL 33957 (813) 472-6290
- Mar. 9-11 **Marco Is. Shell Club Show XII**, Marco Is., FL
John Maerker, 365 Henderson Court
Marco Island, FL 33937 (813) 394-3438
- Mar. 17-19 **St. Petersburg Shell Show**, Treasure Is., FL
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- Mar. 17-19 **Treasure Coast Shell Show**, Stuart, FL
Mrs. Cathy Fry, 1542 Jupiter Cove Dr., Apt 502
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- Mar. 31 - **Georgia Shell Show**, Atlanta, GA
Mr. John Cramer, 3537 Peppermint Court
Apr. 2 (Tent.) Tucker, GA 30084 (404) 934-7143
- May 7 **Pacific Shell Club Show**, San Pedro, CA
Frank Jewett, 1739 Vallecito Drive
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- May 6-7 **Fifth Belgium International Shell Show**, Aarschot, Belgium
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- Jun. 8-12 **American Malacological Union Annual Meeting**, Hilo, Hawaii
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- Jun. 17-18 **XIVème Salon International du Coquillage**, Lutry, Switzerland
Dr. Ted W. Baer
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- Jun. 23-29 **Conchologists of America Annual Convention**, San Diego, CA
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PUBLICATIONS ON FOSSIL MOLLUSKS

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Mississippi has a rich geological history; it is a state reclaimed, as it were, from the sea and it lies within the Gulf Coastal Plain Physiographic Province. Mississippi boasts, among numerous other fine fossil beds, North America's best preserved lower Oligocene molluscan fauna and the best preserved Campanian fauna known anywhere.

These Mississippi fossils are well documented in a series of beautifully illustrated publications from the Mississippi Office of Geology, Department of Environmental Quality. Written by David T. Dockery, III, Division Director of Surface Geology, or by Dr. Dockery in conjunction with other authors, these exceptionally fine publications are enough to send any mollusk fossil hound on a dead run to Mississippi, geology hammer in hand. (For a complete listing of the Mississippi Office of Geology's publications, including topo maps, or to purchase any of the works discussed below, write to that office at P.O. Box 20307, Jackson, MS 39289-1307) All of these guides are written with a friendly awareness of the needs of the amateur as well as those of the professional.

Bulletin 120, **Mollusca of the Moody's Branch Formation, Mississippi** (1977), by David T. Dockery, III. The late Eocene molluscan fauna of this area are photographed under UV light to show the relic color patterns. Bulletin 120 is out of print but available in many libraries. 212 p., 10 figs., 28 plates, 490 illustrations.

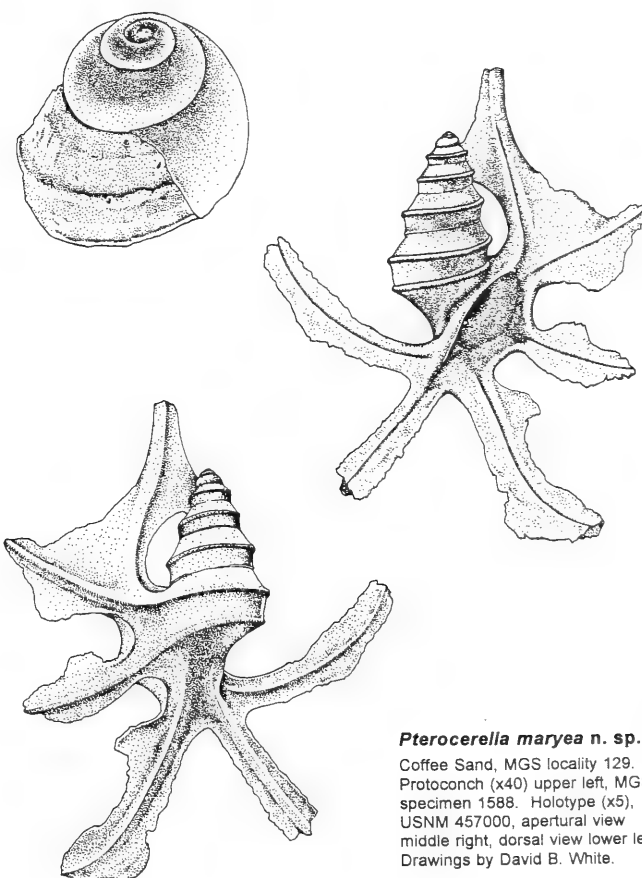
Bulletin 122, **The Invertebrate Macropaleontology of the Clarke County, Mississippi, Area** (1980), also by David Dockery, is a general survey of an area around Meridian which contains the state's Eocene localities and some Oligocene ones. Most of the fossils are molluscs and they are beautifully illustrated in some very fine photographs. 347 species, subspecies and variations are illustrated, including some Eocene ovulids and two *Conus* species. There are many bivalves shown, including 14 pectens and an improbably-looking oyster, *Gryphaeostrea plicatella* (Morton, 1833), thirteen volumes, a lovely *Pseudoliva*, and a host of attractive turrids. The cost is \$4.00. 387 p., 36 figs., 82 plates.

Bulletin 123 (1982), **Lower Oligocene Bivalvia of the Vicksburg Group in Mississippi** by David Dockery, includes 144 species and names 45 new species. In this guide, the species are often illustrated using a number of specimens and views, so that the collector acquires a familiarity with the appearance of the species as a whole, and not just that of a single specimen. Venerids and Arcidae abound, and there are eleven pectens and three spondylids. Included in Appendix 1 are 12 previously unpublished plates from Leseur (1829) and, in Appendix 2, 3 plates from Conrad (1848), of the fossils in the Vicksburg group, including a number of gastropods. The cost is \$9.00. 261 p., 49 figs., 62 plates + 15 plates in the appendices.

Bulletin 124 by F. Stearns MacNeil and David Dockery covers **Lower Oligocene Gastropoda, Scaphopoda and Cephalopoda of the Vicksburg Group in Mississippi** (1984) is a companion to Bulletin 123. This publication discusses and illustrates 411 species, subspecies and varieties, and it describes 189 new species and subspecies. Outstanding coverage is given to the turrids, with a whopping 86 species included. Again, the illustrations are fine and sharp and clear and illustrate a variety of specimens and views in most cases. The cost is \$10.00. 415 p., 16 figs., 72 plates.

Bulletin 129 by David Dockery is **The Streptoneuran Gastropods, Exclusive of the Stenoglossa, of the Coffee Sand (Campanian) of Northeastern Mississippi** (1993). Abundantly supplied with crisp, clear photos, this publication on the fauna of the Upper Cretaceous deposits of Lee County, Mississippi illustrates some of the best preserved gastropods of their ages known anywhere. Many beautiful and strange species of the Apporhaiidae (12 species in nine genera) once lived in this shallow, in-shore shelf environment; one of them, a new species, *Pterocerella maryea*, graces the book's cover. This publication is a modification and expansion of the author's 1991 doctoral dissertation. It covers 100 species of gastropods. The cost is \$15.00. 191 p., 10 figs., 42 plates.

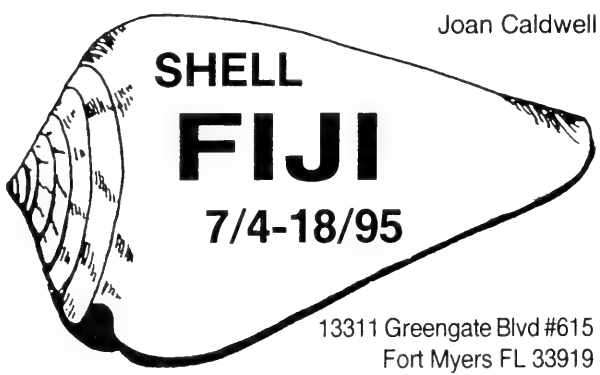
Another publication, this one by Earl M. Manning and David Dockery, is Circular 4 (1992), **A Guide to Frankstown Vertebrate Fossil Locality (Upper Cretaceous), Prentiss County, Mississippi**. Developed from a handbook for high school geology students, it is aimed at hobbyists and secondary students, and a great deal of basic geology is contained therein. The Frankstown locality is composed mostly of vertebrate remains, but among them are abundant fossil shark teeth, always of interest to fossil collectors. The cost is \$4.00. 43 p., 7 figs., 1 table, 12 plates. All prices will have \$1.50 added for postage and handling, and .50 per additional copy (or volume?).



Pterocerella maryea n. sp.

Coffee Sand, MGS locality 129.
Protoconch (x40) upper left, MGS
specimen 1588. Holotype (x5),
USNM 457000, apertural view
middle right, dorsal view lower left.
Drawings by David B. White.

Joan Caldwell



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TOM RICE tells us it is time to send in our entries for the second edition of his **Directory of Conchologists/Malacologists**. Remember, you don't have to be an expert, or a professional. If you are a COA member, you are conchologist enough to be listed! If you are already listed in the first edition, you need not fill out another form. If you don't have a copy of Tom's mail-in form, see page 20 of the June 1994 **American Conchologist**. Help this publication to succeed. It will help further our hobby. And while you are at it, let Tom know if you want to order a copy of his **Directory**.

BOCAGIANA, journal of the Museu Municipal do Funchal, Madeira Island, Spain, records the finding of two Cassidae in Madeiran waters, *Cypraecassis testiculus senegalica* (Gmelin, 1791) and *Phalium saburon* (Bruguère, 1792). Prior to this, only *Phalium granulatum undulatum* (Gmelin, 1791) was known from this area of the eastern Atlantic. [A.D. Abreu and M.J. Biscoito, 1993. The Family Cassidae (Mollusca: Gastropoda) in the archipelago of Madeira]



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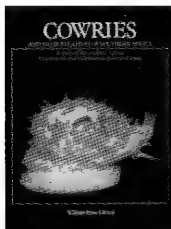
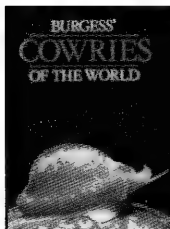


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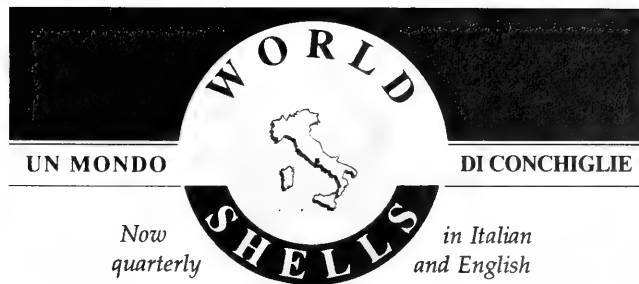
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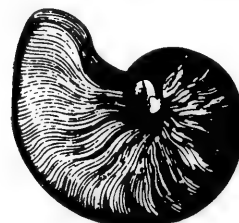


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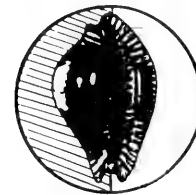
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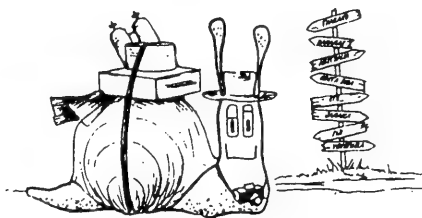
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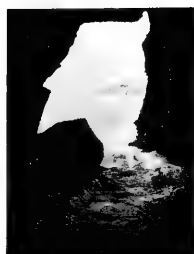
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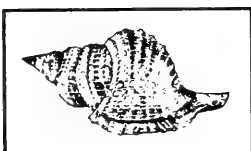
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A *Harpa costata* is a rare shell, but a photo of a *Harpa costata* self-amputating its foot (a defense mechanism) is much rarer. Alain Schildt made this photo Jan 18, 1993 on the Isle of Mauritius. It was featured on the cover of *Xenophora*, the Bulletin of the Association Française de Conchyliologie, Jan-March 1994. We thank the editorship of *Xenophora* and M. Schildt for their gracious permission to reprint M. Schildt's treasure.



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AMERICAN CONCHOLOGIST

QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 23, NO. 1

MARCH 1995



Karen
Couch
1995

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MEMBERSHIP

Memberships are for the calendar year, January through December. Late memberships shall be retroactive to January. **DUES:** (per year) INDIVIDUAL (USA, Canada, Mexico) \$12.50; FAMILY & CLUB/ORGANIZATION (USA, Canada, Mexico) \$15.00; CARIBBEAN, SOUTH & CENTRAL AMERICA (via Airmail) \$20.00; COUNTRIES OUTSIDE THE AMERICAS (via Airmail) \$25.00. Make checks payable to CONCHOLOGISTS OF AMERICA. Please pay in U.S. dollars or with a check that has Transit Enrouting and Account Numbers printed at the bottom of the check, or with a money order; send to Bobbie Houchin, Membership Chairperson. **RENEWALS** are sent to the TREASURER, Walter Sage. **BACK ISSUES** are available from PROPERTIES DIRECTOR Hank Foglino, 4 Trent Court, Smithtown, NY 11787-1266. Prior to 1985 - \$1.50 each; 1985 to current - \$3.00 each.

COVER: Karen Couch (12 Ventura Lane, Olathe, Kansas 66061-3057) is once again our cover artist. This time she chooses as her subject some of the Kansas and Missouri freshwater mussels. The leaf and lady bug add a stream-bed atmosphere to the drawing, as well as serving as a scale. The mixed-media drawing is intended to bring these endangered animals to our attention. The artist says, "Kansas law requires a permit to collect — that may also be true of Missouri. DO NOT collect in Kansas without the proper permit." She wishes to thank Frieda Schilling of St. Louis and Dr. Don A. Distler and Dan Bleam of Wichita State University for their interest and continued assistance. We in turn wish to thank her for her very beautifully executed drawing.

PRESIDENT'S MESSAGE

The holidays are past us for another year and so is the first part of 1995. January flew by. The first part of the month I was busy preparing for the COA Mid-year Board Meeting. I am pleased to say that all Board members were able to attend. I would like to welcome Rosalie Taylor of Austin, Texas, to the Board as Public Relations Director. I would also like to thank Larry Stiles of Fern Park, Florida, for the fine job he did in that position for the last three years. In case you aren't aware of it, for the past five years, COA has held this January meeting. Each Board member attends at his or her own expense, in terms of time and money. COA also has a Board meeting during the annual convention, held in several different sessions so all the business of the organization can be discussed. Far more is accomplished during the midyear meeting when distractions like programs, field trips and friends are not present. I hope you realize the dedication of your Board members and the work they do for you. Once again I want to repeat my request from the September President's Message: Anyone interested in serving on the COA Board of Directors now or in the future should please contact me or any other director.

Many of you have contacted me about the petition that has been circulating regarding allowing COA members to trade or sell shells at the annual convention. Gene Everson called to inform me about his petition, so that I would not be in the dark about its purpose or origins. This matter was discussed at our January meeting. The Board's decision at this time is as follows: Anyone who has been a member of COA for the previous six months, has a valid tax identification number, and is willing to purchase table space can sell shells during the annual convention and bourse. There are administrative and, in many cases, legal obstacles in trying to do this in any other fashion. If anyone has a suggestion on this topic, please forward it to me in writing and the Board will give it due consideration.

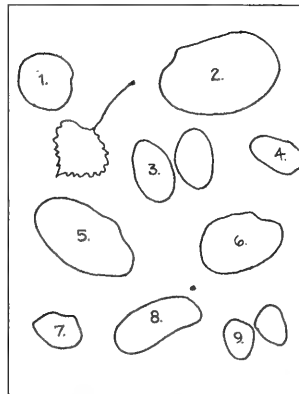
A member who does not meet other definitions of a professional shell dealer [i.e., shell dealers are those who maintain a shop or advertise (put out a list) for sale of shells, shellcraft material or dredgings], but who buys a table at the bourse is not considered a "shell dealer" for purposes of eligibility for the COA Award (and any other award, to my knowledge) at participating shell shows.

I hope everyone is making plans to attend the June COA convention in San Diego. Having attended the 1989 convention there, I can hardly wait. Hope to see you all there.

LINDA

In Memoriam

Mili Backus
Larry Baxter
Charles Conniff



KANSAS AND MISSOURI MUSSELS: (A FEW)

1. *Pleurobema coccineum* (Conrad, 1834)
2. *Leptodea fragilis* (Rafinesque, 1820)
3. *Actinonaias carinata* (Barnes, 1823)
4. *Ligumia subrostrata* (Say, 1811) female
5. *Pyganodon grandis grandis* (Say, 1829)
6. *Potamilus purpuratus* (Lamarck, 1819)
7. *Obliquaria reflexa* (Rafinesque, 1820)
8. *Elliptio dilatata* (Rafinesque, 1820)
9. *Ellipsaria lineolata* (Rafinesque, 1820)

EDITORIAL

Well, Sanibel, you've gone and done it! A total live shell-ing ban! On the island that has been described worldwide as the shelling mecca of the United States. On the island that is building the Bailey-Matthews Shell Museum, the only museum of its kind in the country. On the island that attracts tourists to its shores with the lure of seashells. Well, good luck now!

When is the world going to stop rallying to the cry of "Conservation for Conservation's Sake!"? When are we going to realize that it's becoming only a guilt-assuaging buzzword for comfort-loving Americans, and that if we don't wake up it will go the way of all such emotionally loaded self-help trends? Extremist measures like Sanibel's move us several steps closer to serious trouble, with the ecology and with the public's attitude toward it. If we pass ill-considered laws, just so we can feel like we are *DOING SOMETHING*, we'll help to toll the death of conservation as an effective movement to preserve the health of our environment.

Without conservation of our natural resources, we are a doomed species on a doomed planet. No argument there. But before we can sanely and effectively implement conservation measures that will work, that will undo the damage we have already done and put the Humpty-Dumpty of our earth and its soil and waters and air back together again, we have to put some thought and some research into understanding what is needed and what will bring about the desired effect. Sanibel didn't.

Sanibel appears to have considered neither biology nor human nature. (Or perhaps they considered them but discarded their conclusions.) Instead of educating the tourist, whom they have a perfect opportunity to reach, they alienate him. Far from instilling the respect for marine animals that Sanibel hopes will be an outgrowth of this law, they instead foster hostility, and ways to cheat the laws, effectively robbing the molluscs of what respect they currently have.

And the molluscs are not endangered, at least not by overcollecting. Tucker Abbott is quoted in an article in the *Sanibel Island Reporter* (11/25/94) as saying that the Gulf waters are rich with mollusks, and yet there is an impression that there are fewer shells today. "That may be true," he says, "for the first 100 yards out." Molluscs in general reproduce in the thousands and reach maturity very rapidly. Dr. Abbott also said, "We cannot bring up new generations of children who think it sinful to make reasonable samplings of natural history things."

The only serious threat to the health of the animals is pollution. Perhaps the hoards of tourists that have, up til now, frequented Sanibel's motels, guest houses and beaches, have contributed to that pollution, directly or indirectly. But shell collecting is not to blame. Sanibel's city movers appear to have got hold of the wrong end of the cone shell! We hope they will right the situation before it turns around and stings them.

OOPS!!!

In the December article on the San Diego Convention, page 8, Don Pisor's telephone number was given incorrectly. Convention Chairman Don Pisor may be reached at 619-279-9342. The incorrectly published phone number didn't worry Don near so much as it did the poor woman who was receiving all those COA calls intended for Don, so let's take note of this change and give her a break.

And speaking of fiascoes! Those green messages that were stamped on December *American Conchologist* envelopes were a disaster! Letters from worried members, accompanied by copies of cancelled checks, cut-out little green messages, and other evidence of error, have been flowing in to Bobbie Houchin, Walter Sage and your editor in appalling numbers. We're sorry to have distressed you.

The stamps went on everyone's envelope, not just those of unpaid members. Our *American Conchologist* is mailed via Bulk Mail, so must be addressed and bundled according to the mysteries of U.S. zip-code order. Stamping some envelopes and not others is a difficult and time-consuming task, subject to a lot of error, so we elected to stamp all envelopes. The intent was to let everyone know that dues would soon be past due and remind those who hadn't paid to do so soon. The stamp we used was an old one that we hoped to get by with. We didn't! Your editor readily admits that it was poorly worded for the occasion and offers her profuse apologies to all those who worried, all those who wrote, all those who even thought about writing. We'll do better next year, we promise!

Also, notice to pay dues on page 2 was the source of much concern. That notice was picked up from the September issue and inserted unchanged. Consequently it told readers that a gold form was ALSO in the December issue. There was no gold form. That is ALWAYS and ONLY in the September issue. We are sorry for the confusion. We'd like to put some of the blame off on flu and a terribly busy holiday season.

BOARTALK.....

From COA Treasurer WALTER SAGE: I am profoundly moved and most grateful for the cards and calls expressing concern over my November surgery. All has gone well and the cancer has been taken out. By the time you read this, I will have had the necessary radiation treatments and I hope I will be back to normal activities.

Point 1 to remember: the gold dues renewal form is inserted each year in your September issue. If you have used that form to pay your dues from October to December, I have carefully recorded that fact and Membership Director Bobbie Houchin and I know very well that you have paid your dues. The stamp each year on the envelope for the December issue is meant as a reminder to those who have NOT PAID their dues by the time the December issue is mailed (normally around December 10). If you don't have the gold form still, check your checkbook and see if you've already sent me a check. If you do send us a "duplicate payment," we will apply the second check to a year's additional membership. Thanks for your attention to this matter.

ADVERTISING ANNOUNCEMENT:

Effective now: Starting with the June issue, *American Conchologist* will accept a new supplementary advertising medium: single sheets or 8 1/2 x 11" folios inserted loose in the magazine. No more than two of these inserts may be accepted for any issue, first come, first served. Interested prospective advertisers may inquire for prices and requirements by contacting the Editor's office, Phone: 502-228-8741 (after 4:00 p.m. EST); Fax: 502-426-4336; or by mail, 1222 Holsworth Lane, Louisville, KY 40222

RECENT CHANGES IN THE PECTINIDAE Part 1

by Carole P. Marshall

There have been many changes in the Pectinidae in the last few years and some of them have come so fast that we amateurs can barely keep up. During the 1994 COA meeting in Corpus Christi, Texas, I gave a slide program on some of the changes that have occurred, and was asked, because of the great volume of information which was presented if I would please write an article for the *American Conchologist*. What follows is in response to that request.

Why are changes being made at all? Changes come about because of new data that is discovered. Today, with the advent of rapid communications, information disperses in a much speedier fashion than was ever possible before. In past times,

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when a shell was named in France, for example, it might have been years before scientists in other countries heard of it, and by then the shell had another three or four names. This situation has given not only us amateurs, but leading malacologists as well, some severe nomenclatural problems. At present I have a list of almost 1,000 names of the Pectinidae and Propeamussiidae, obtained from various scientific papers, with most of those being synonyms for only a few hundred species; and more species names are coming to light all the time. These names are for Recent species only and, with just a few exceptions, do not include fossil species. Therefore, as new information is discovered, we must bear with the changes, and watch as old, familiar species names pass into synonymy and and be patient when changes must be made at the generic level to reflect new information about family relationships.

(Continued on page 7)



Figure 1. Simple Ribs

Some species have a differing rib pattern on each valve.

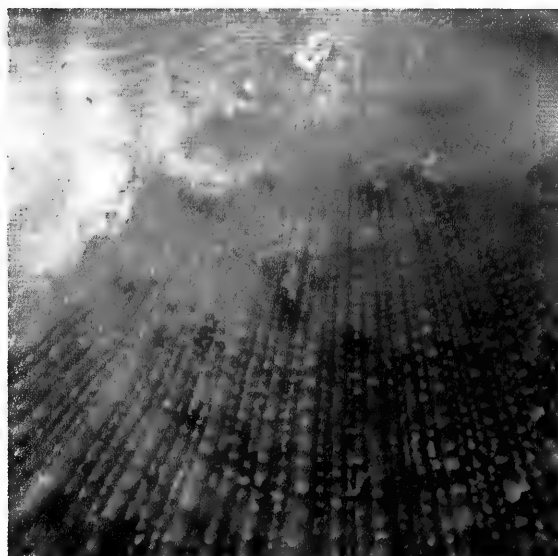


Figure 3. Intercalating Ribs

RIB STRUCTURE

One of the characteristics used to decide which genus a species belongs in is the way the ribs are formed. There are three main types of rib formation in the pectens.

Figure 1. Simple Ribs. In some species, such as *Argopecten irradians concentricus* (Say, 1822) the ribs are simple. They start at the umbones and continue unbroken to the margins.

Figure 2. Branching Ribs. *Chlamys islandica* (Müller, 1776) is an example of this type of rib structure. The main ribs split to fill up the interspaces. How the species does this rib splitting, and at what stage in its development, may be important factors in differentiating one species from another.

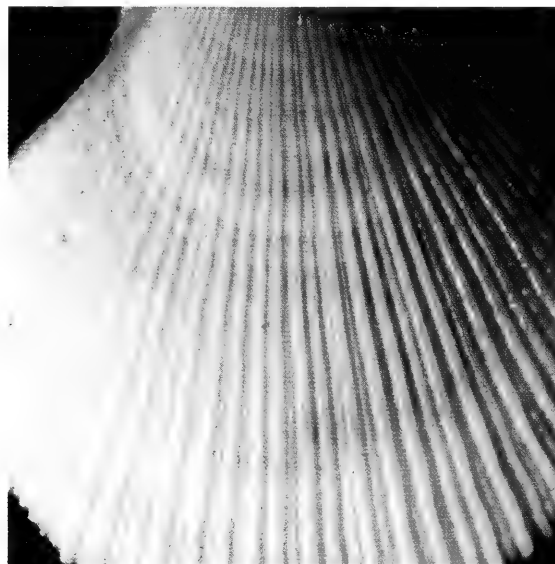
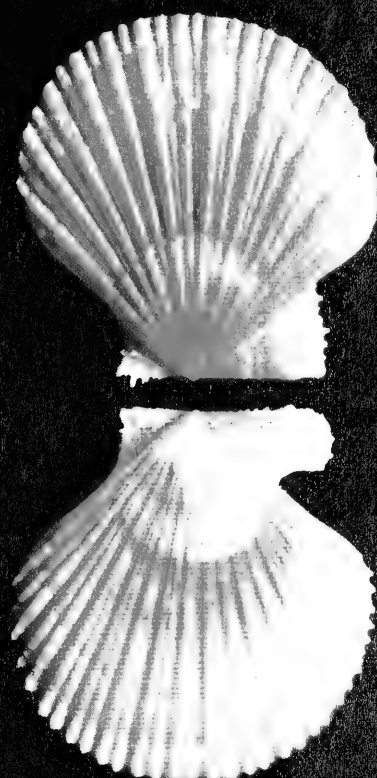
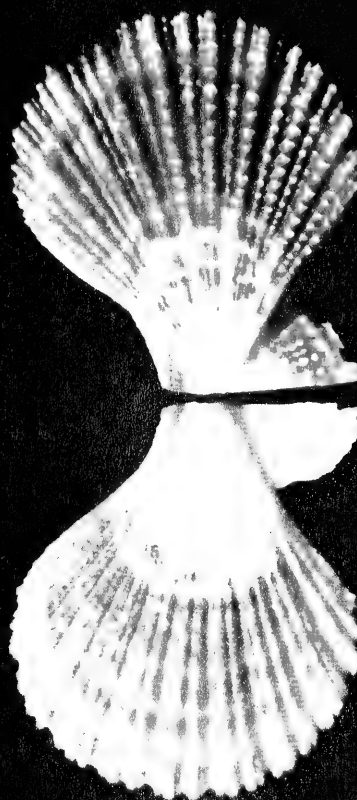
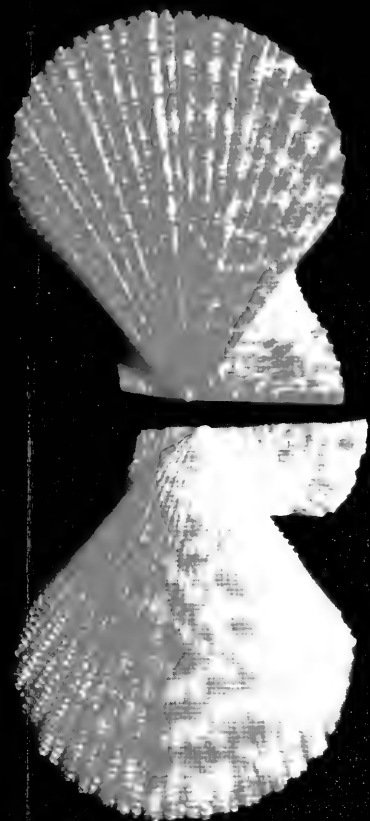


Figure 2. Branching Ribs

Figure 3. Intercalating Ribs, such as those found in *Crassodoma gigantea* (Gray, 1825) are another form of rib structure. In this example the ribs just seem to begin in one of the interspaces and do not branch off one another.

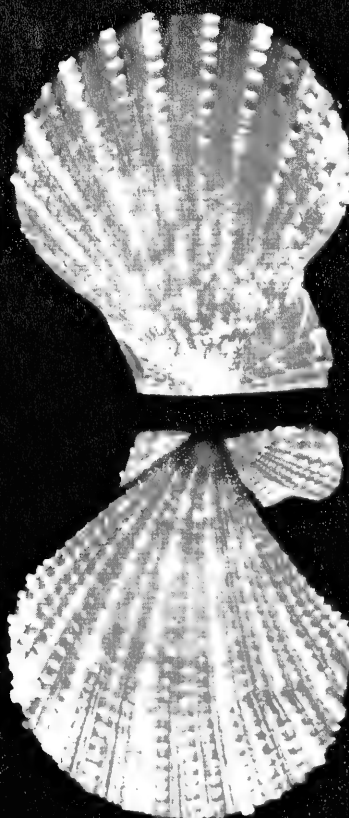
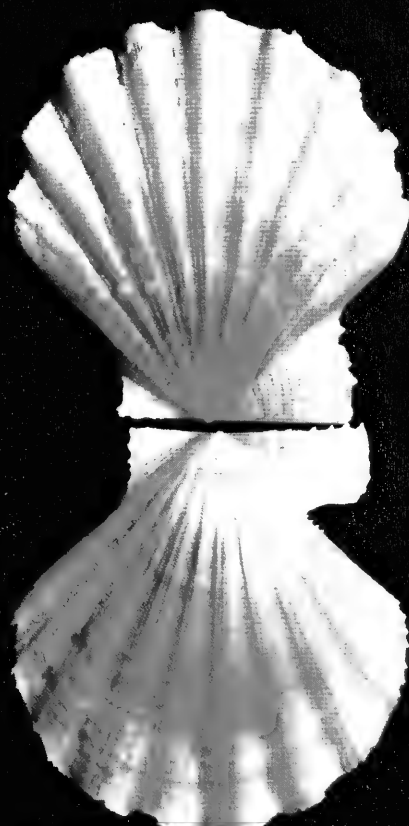
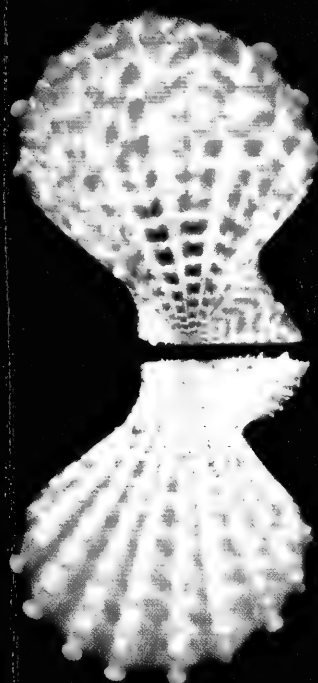


Old Name: *Chlamys sentis*
(Reeve, 1853)
Now: *Caribachlamys sentis*
(Reeve, 1853)

Old Name: *Chlamys ornatus*
(Lamarck, 1819)
Now: *Caribachlamys ornatus*
(Lamarck, 1819)

Old Name: *Chlamys mildredae*
(Bayer, 1941)
Now: *Caribachlamys mildredae*
(Bayer, 1941)

Old Name: *Chlamys bruei*
(Payraudeau, 1826)
Now: *Karnekipia bruei*
(Payraudeau, 1826)



Old Name: *Chlamys imbricata*
(Gmelin, 1791)
Now: *Caribachlamys imbricata*
(Gmelin, 1791)

Old Name: *Chlamys gilchristi*
(Sowerby, 1904)
Now: *Karnekipia gilchristi*
(Sowerby, 1904)

Old Name: *Chlamys lemniscatus*
(Reeve, 1853)
Now: *Laevichlamys lemniscatus*
(Reeve, 1853)

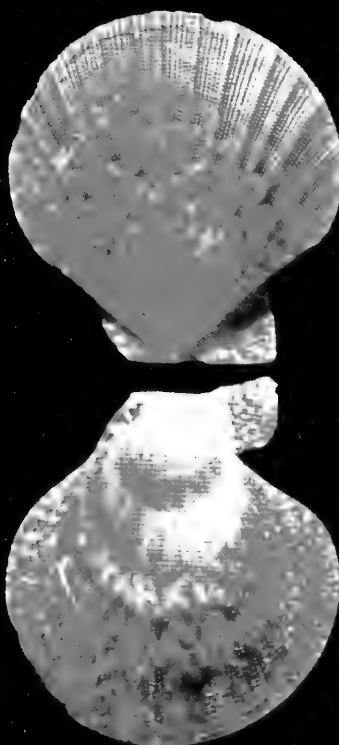
Old Name: *Chlamys irregularis*
(Sowerby, 1842)
Now: *Laevichlamys irregularis*
(Sowerby, 1842)



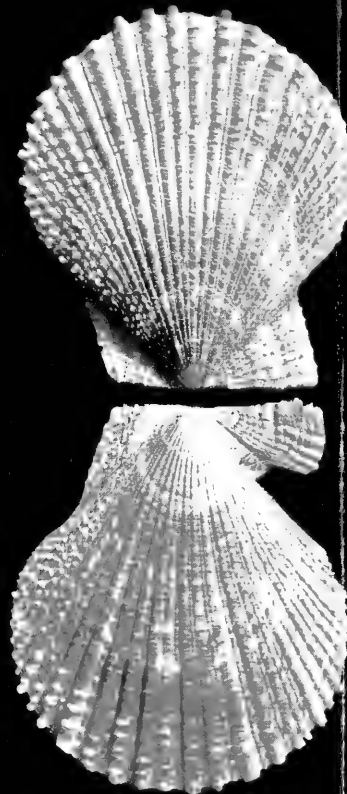
Old Name: *Chlamys limatulus*
(Reeve, 1853)
Now: *Laevichlamys limatulus*
(Reeve, 1853)



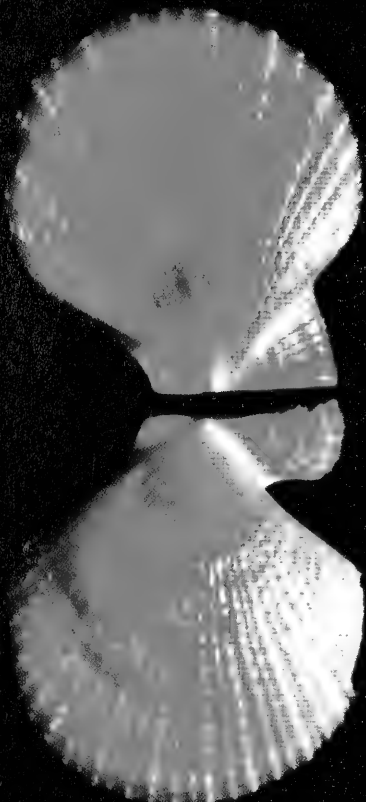
Old Name: *Chlamys jousseaume*
Bavay, 1904
Now: *Laevichlamys mollitus*
(Reeve, 1853)



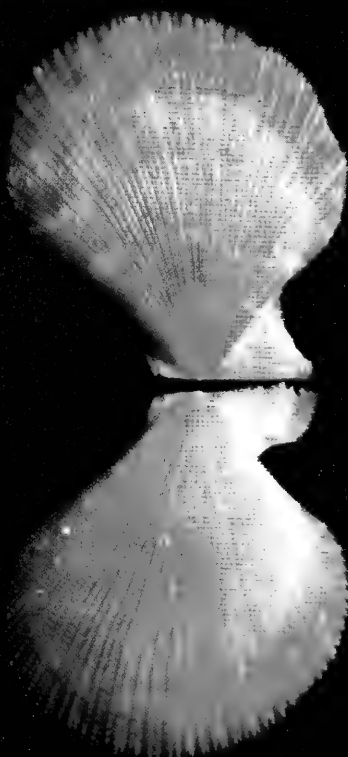
Old Name: *Chlamys multisquamata* (Dunker, 1864)
Now: *Laevichlamys multisquamata* (Dunker, 1864)



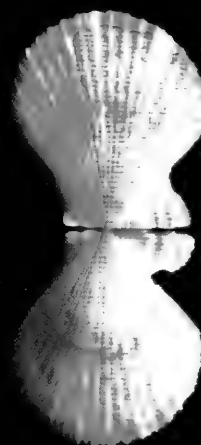
Old Name: *Chlamys ruschenbergi* (Tryon, 1969)
Now: *Laevichlamys ruschenbergi* (Tryon, 1869)



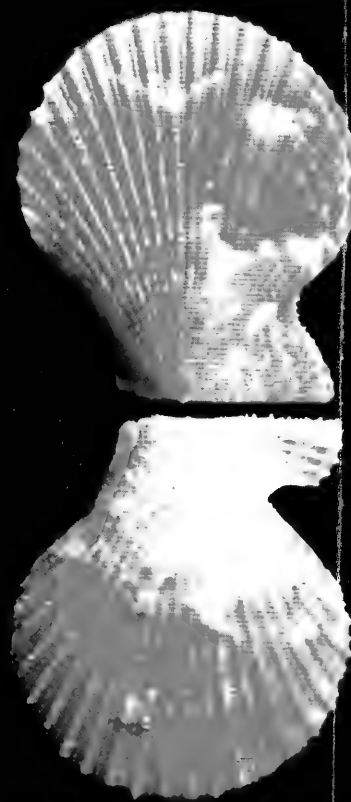
Old Name: *Chlamys larvata*
(Reeve, 1853)
Now: *Laevichlamys squamosa*
(Gmelin, 1791)



Old Name: *Chlamys marshallensis*
Waller, 1972
Now: *Laevichlamys wilhelminae*
(Bavay, 1904)



Old Name *Chlamys benedicti*
(Verrill & Bush, 1897)
Now: *Spathochlamys benedicti*
(Verrill & Bush, 1897)



Old Name: *Chlamys lowei* Hertlein,
1935
Now: *Spathochlamys vestalis*
(Reeve, 1853)

RECENT CHANGES IN THE PECTINIDAE Part 1 (Continued from page 4)

There are two main features in the Pectinidae that separate them from other groups of shells. One of these is the presence of a small set of teeth on the right valve under the posterior ear. This set of teeth is called the ctenolium [ten-O-lee-um], and is present in all species of pectens — perhaps not in all adults, but in some stage of the life cycle. The ctenolium allows the pecten to attach itself to a stable spot through means of a byssus, and prevents the byssal threads from getting tangled. Other species have byssal threads, but none has the ctenolium.

The second distinguishing feature is the composition of the hinge ligament and the resilium which hold the two valves of the shell together. In the superfamily Pectinacea, the resilium consists of a non-fibrous central pad, with a fibrous outer pad on each side of the non-fibrous core. In other bivalve superfamilies, the ligament is completely fibrous (see Waller, 1991).

In addition to the rib structure, a very important feature is the microsculpture. **Shagreen microsculpture** looks like a tiny screen with criss-crossed lines; this microsculpture may appear over the whole valve, in the interspaces, or only in certain stages in the life cycle. **Camptonectes microsculpture** is a series of small scratches running from the umbo toward the margin. **Concentric sculpture** goes from side to side, or left to right. **Radial sculpture** runs from the umbones toward the margins.

Some other characteristics that pecten workers look for when classifying a species are: the shape of ribs, the interspaces, the size and shape of the auricles (ears), the convexity of the valves, the angle of the umbones, the general shape of the shell, the hinge teeth, and the interior marginal rib structures.

When grouping shells together or separating them into families, tribes or genera, one needs to consider all of these features and even more.

CHANGES IN THE PECTINIDAE:

One of the first changes we are likely to encounter is related to the term Pectinidae. The family name has long been attributed to Rafinesque, 1815, but it has been found to have been used by Wilkes, 1810 for the group in the **Universal Dictionary of Arts, Sciences and Literature**. (per Eugene Coan, see Waller, A.M.U. Bull.) Therefore, instead of Pectinidae Rafinesque, 1815, we now have Pectinidae Wilkes, 1810.

CARIBACHLAMYS Waller, 1993

One of the new genera to be named. The type species is *sentis* (Reeve, 1853). Other species moved to this new genus are *ornatus* (Lamarck, 1819); *mildredae* (Bayer, 1941); *imbricata* (Gmelin, 1791); and one new fossil species, *paucirama* Waller, 1993 from Hendry County, Florida.

ABBREVIATED DIAGNOSIS: *Caribachlamys*: Non-cemented Crassodomini, prodissoconch with large P1 stage and short P2 stage, strong antimarginal striae in early life and present between commarginal lirae in rib interspaces.

DISCUSSION: Crassodomini is a tribe of shells which cement themselves. The P1 stage in the development of a shell is the larval stage or beginning, during which stage the valves cannot be closed; when the shell enters the P2 stage it is finally able to close its shell. During the P2 stage the scallop loses its velum with which it swims planktonically, and actually becomes a shell. The end of the P2 stage occurs when the shell begins to transform itself and to add ribs and the microsculpture which will give it its adult appearance. As for the part about the strong antimarginal striae in early life, this is

not an easily recognizable feature, unless a strong microscope is used. The species *C. ornata* and *C. sentis* are very difficult to distinguish between. Upon close examination, however, the rib structure can be seen to be entirely different. In Fig. 4 and Fig. 5 the I-beam shaped ribs of *ornata* are compared with the rounded ribs in *C. sentis*.

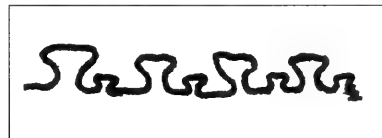


Figure 4.
Rib structure of *C. ornata*.

Two difficult species to distinguish in the field, especially as their ranges overlap in some areas. By looking at the shape of the ribs, separating the two species becomes simple.

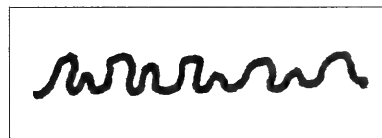


Figure 5.
Rib structure of *C. sentis*.

KARNEKAMPIA Wagner, 1988

Another new genus. Type species *bruei* (Payraudeau, 1826). Other species include *sulcatus* (Müller, 1776), *alicei* (Dautzenberg & Fischer, 1897), and *gilchristi* (Sowerby, 1904).

ABBREVIATED DIAGNOSIS: *Karnekampia*: Hidden hollow ribs on left valve primary ribs; secondary ribs with visible rows of small tubercles; right valve with broad plicae with riblets of equal strength; all ribs begin at the same point.

DISCUSSION: All these are eastern Atlantic species, from the northern *sulcata* found off Norway to the West African *gilchristi*. The hollow ribs usually cannot be detected unless they are broken. The shells are somewhat thin and fragile.

LAEVICHLAMYS Waller, 1993

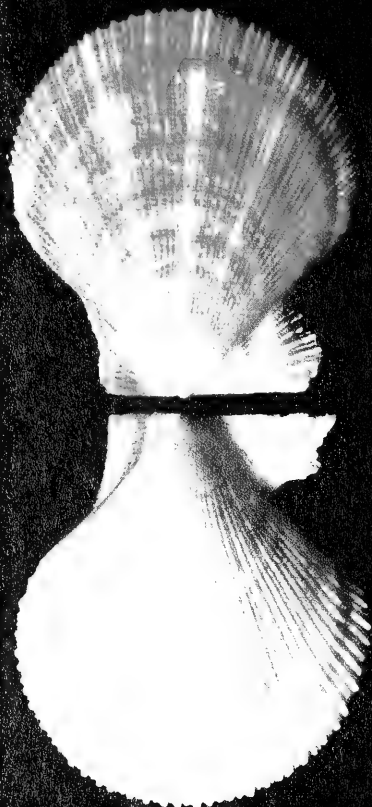
Type species *multisquamata* (Dunker, 1864). Other species: *irregularis* (Sowerby, 1842), *lemniscatus* (Reeve, 1853), *limatulus* (Reeve, 1853), *mollitus* (Reeve, 1853), *ruschenbergeri* (Tryon, 1869), *squamosa* (Gmelin, 1791), and *wilhelminae* (Bavay, 1904).

ABBREVIATED DIAGNOSIS: *Laevichlamys*: Non-cemented Chlamymini, shagreen microsculpture mostly absent and always absent on central part of disk, ribs introduced by intercalation, regular commarginal ribs absent.

DISCUSSION: There are several species name changes due to synonymy included in this group. One is *mollitus* Reeve, 1853 which was formerly known as *jousseau* Bavay, 1904. Another is *squamosa* Gmelin, 1791, formerly known as *larvata* Reeve, 1853. And *wilhelminae* Bavay, 1904, which has been known under the name of *marshallensis* Waller, 1972.

Without going into the full classifications, the Tribe Chlamymini includes the genus *Hinnites*, which is different from the genus *Crassodoma*, although both are cemented. [A note on Tribes: A Tribe, one step below a Subfamily, is composed of several Genera linked together by a common ancestor.] One of the closest relatives to the type species *multisquamata* is *squamosa* from the Indo-Pacific area. Except

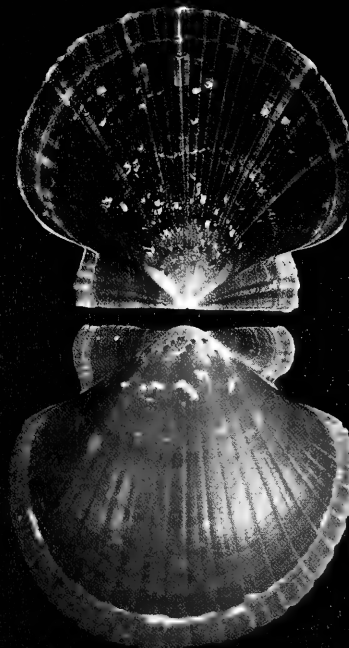
(Continued on page 9)



Chlamys islandica (Müller, 1776)



Spathochlamys vaginulus Dall,
1898: fossil from Florida

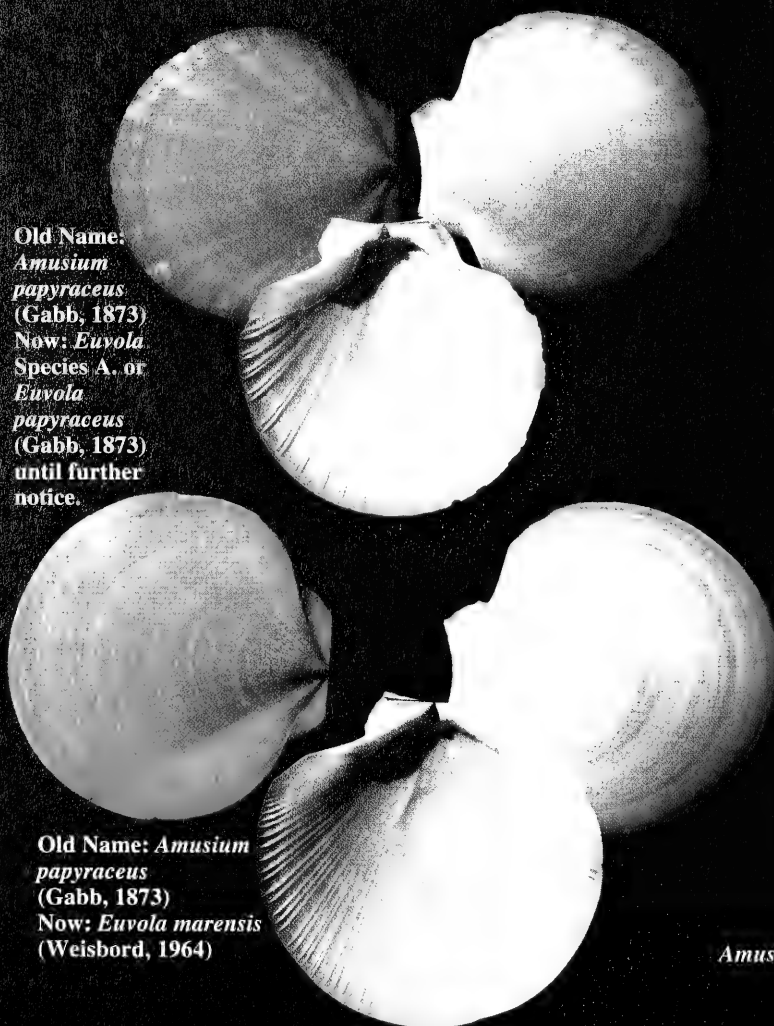


Old Name: *Pecten ziczac* (Linné,
1758)
Now: *Euvola ziczac* (Linné, 1758)

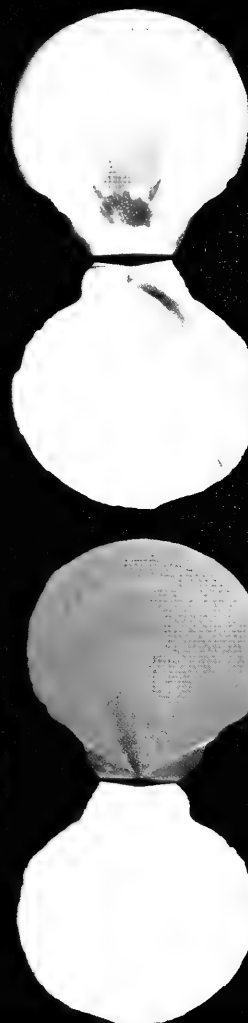


Old Name: *Amusium laurenti*
(Gmelin, 1791)
Now: *Euvola laurenti* (Gmelin, 1791)

Old Name:
Amusium
papyraceus
(Gabb, 1873)
Now: *Euvola*
Species A. or
Euvola
papyraceus
(Gabb, 1873)
until further
notice.



Old Name: *Amusium*
papyraceus
(Gabb, 1873)
Now: *Euvola marenensis*
(Weisbord, 1964)



Amusium pleuronectes (Linné, 1758)



Crassodoma gigantea (Gray, 1825)

RECENT CHANGES IN THE PECTINIDAE Part 1 (Continued from page 7)

for a few minor differences they are almost identical. *Squamosa* has a narrower umbonal angle, scales are usually present on only the higher order of ribs, and there is a less folded right anterior ear. *Multisquamata* usually but not always has a yellowish umbo and *squamosa* is more uniform in color and more brightly colored.

SPATHOCHLAMYS Waller, 1993

Type species *benedicti* (Verrill and Bush, 1897). Other species: *vestalis* (Reeve, 1853). One fossil species, *vaginulus* [vagin-yoo-lus] (Dall, 1898) from the Chipola River Formation near Apalachicola, Florida.

ABBREVIATED DIAGNOSIS: *Spathochlamys*: Mima-chlamyidini with rounded or broadly trigonal ribs. Interspaces containing a single very narrow riblet. Crests of major ribs with scales that are concave up and not concave down. Edges of interior ribs strongly carinate. Interspaces in early ribs without microsculpture.

DISCUSSION: There is one important name change in this new genus. It has been found that *vestalis* Reeve, 1853 is an earlier name for what we commonly know as *lowei* Hertlein, 1935. The *Mimachlamys* are characterized by: left valve more convex than right, unequal ears, smaller posterior, deep byssal gape, deeply furrowed fasciole, (trench between umbo and ttenolium), sculpture of closely scaled radial ribs with minor ribs flanking them, sculpture of both valves similar, a smooth prodissococonch, and simple ribs. Therefore, the *Spathochlamys* are very similar to the *Mimachlamys* with the additional important characteristic of the single riblet in the interspace and the difference in the shape of the scales. Another important point of difference is the interior ribs with sharp edges as opposed to rounded interior edges as in *Mimachlamys australis* Philippi, 1845.

Other changes made recently are the movement of all of the Caribbean *Amusium* to the genus *Euvola* and the division of the species *papyraceum* into two separate species. The genus *Euvola* seems to be confused with the genera *Pecten* and *Notovola*. It appears that there are no shells in the genera of *Pecten* or *Notovola* in the United States. The most prominent difference among the three genera are the right valve crura or hinge teeth.

In Figure 6, we see the hinge teeth of the right valve of *Euvola* with a simple long tooth on each side. In Fig. 7, the true *Pecten* has two long teeth and two smaller teeth. In Fig. 8, the *Notovola* has two very long teeth and two very small teeth. While all have the deeply cupped right valve and the almost flat left valve, there are slight differences in flatness and convexity. A brief description of the Euvolas and Amusiums will help us better understand this change.

EUVOLA Dall, 1898

Type species *ziczac* Linné, 1758

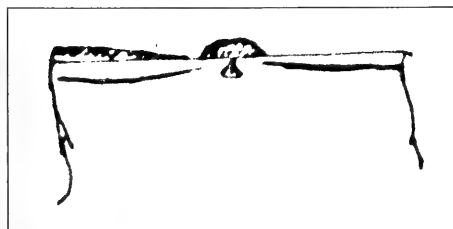


Figure 6
Euvola

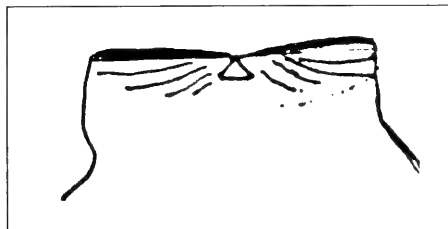


Figure 7
Pecten

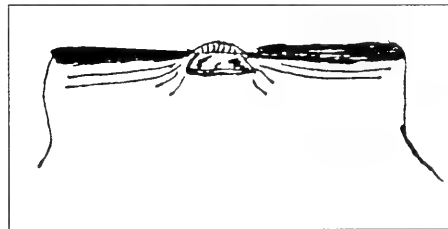


Figure 8
Notovola

ABBREVIATED DIAGNOSIS: *Euvola*: Valves smooth except for radial grooves. Ribs moderate or obsolete. Only one pair of cardinal crura. Interior with narrow rounded riblets. Umbonal area of left valve flat. More inflated right valve.

AMUSIUM Bolton, 1798

Type species *pleuronectes* Linné, 1758

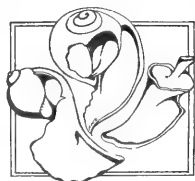
ABBREVIATED DIAGNOSIS: *Amusium*: Round; thin; smooth exterior. Compressed. Interior with raised ribs. Small auricles. Simple margins gaping at both sides. One other feature of the Amusiums is the presence of ribbed auricles and a small muscle scar called the gill protractor scar, thought not to be present in the true *Pecten* or *Euvola*s, but present in most other genera in the Pectinoidea.

DISCUSSION: Due to the absence of this muscle scar and the ear ribbing in our Caribbean species, *Amusium laurenti* (Gmelin, 1791) and the former *Amusium papyraceum* (Gabb, 1873) have been moved to the genus *Euvola*. It has been further discovered (Waller, 1991) that two species exist where it was previously thought that only one existed, and so *papyraceum* has been divided. The southern form, found to exist off northern South America, from the mouth of the Amazon westward to western Colombia was the same as a fossil from the Pleistocene of the Playa Grande Formation and is now called *Euvola marensis* Weisbord, 1964 (Waller, 1991). The northern species that we are at present calling *papyraceum* lives from the western and northern Gulf of Mexico into eastern Florida and is now known as *Euvola* species A. The type species of *A. papyraceum* was named from a fossil from the Dominican Republic and Dr. Waller says it seems to be a true *Amusium*. Since a new name has not yet been proposed for *Euvola* species A and we all know it as *papyraceum* it seems reasonable to continue using that name for the northern species until more information is available. Some of the differences between the northern and the southern shells are: *marensis* has a more convex left valve, the adult shell has a darker brown margin, while the northern shell is more yellowish, and there is more noticeable concentric sculpture in the southern form. Internal ribs are different — those of the northern form are more neatly paired.

— To Be Continued in June —

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PUBLICATIONS ON FOSSIL MOLLUSCS

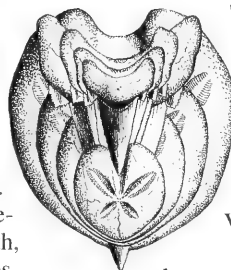
ANOTHER LOOK AT THE FOSSILS OF NORTH CAROLINA

Back to North Carolina we go* for a matched pair of small guide books published by the North Carolina Fossil Club. Author Richard Chandler and Illustrator John Timmerman (also Art Director, contributor and illustrator for *American Conchologist*), both amateur fossil collectors, have produced two fine little guides for other amateurs. Both books have as their main focus vertebrate fossils, especially shark teeth. In fact, if you're at all taken by shark teeth, these guides are a must. North Carolina is a graveyard for fos-

sil shark bits and pieces; the author, whose bias is evident, is an avid collector of these grisly artifacts; and the illustrator has never been known to pass one up.

Neogene Fossils of North Carolina (1994) covers the rare Pliocene and much more common Miocene fossils from North Carolina. After a brief coverage of the fossil record and a helpful description of the three major Neogene formations, their appearance and their representative fossils, a section follows on "Shark Remains." Such topics as tooth variation, pathology, relative scarcity and size ranges are touched upon, followed by John Timmerman's clear and capable illustrations of the teeth of 22 species of sharks. Also illustrated are other fossilized shark and ray parts, various teeth, ear bones and skeletal parts of marine mammals, and elephant, horse and bear fossil remains. Various bony fish are represented.

The final eight pages in the **Neogene Fossils** belong to the illustrator. A trained biologist as well as an



*See also *American Conchologist*, March 1994, p. 20, "Fossil Publications on Molluscs."

(Continued on page 11)

ONE MAN'S OPINION

Don't Blame Me — I Don't Like It Either!

by Gene Everson

Would you believe that the family Buccinidae (Neptunes, Babylonias, etc.) now also contains the Fasciariidae (*Fusinus*, *Latirus*, etc.), the Melongenidae (King's Crowns, Busycon Whelks, etc.), and the Nassariidae (the small Mud Snails)? This idea has now found its way into popular books. If you have already seen this classification in Barry Wilson's **Australian Marine Shells 2**, your first impression was probably, "Hey! A typo!" But, unfortunately, it was not. Wilson has followed Ponder and Warén, 1988, "Classification of the Caenogastropoda and Heterostrophia — A List of the Family-Group Names and Higher Taxa," published in **Malacological Review**, Supplement 4, pages 288-326.

As Ponder and Warén state in the introduction, "The recent use of new characters, such as osphradial characters (Haszprunar, 1985a) and sperm morphology (Healy, 1988, this volume) has introduced new perspectives in classification, as has the continuing increase in the data about the detailed anatomy of gastropods." It appears that the scary prediction about the age of specialization has come true — we are learning more and more about less and less, and less and less about more and more, until pretty soon we'll know nothing. But Ponder and Warén scientifically explain that these groups are included in the Buccinidae "because there are virtually no known characters that consistently and reliably separate them at family level (Haller, 1888; Ponder, 1973)." Right. So let's put chickens and bees in the same family because they both fly and then watch Colonel Sanders go broke trying to sell finger-lickin' bees. And classify nudibranchs with fish because they both have gills, never mind the small detail that fish are vertebrates. If you can disregard the calcium-based structure in mollusks, you can ignore it in fish too! And what is the current definition of a family anyway? The experts can't seem to agree.

Some other changes in Ponder and Warén's work which may be of interest to the collector are:

- "We have used the ending 'OIDEA' for superfamily names instead of 'ACEA' as recommended by the ICZN

Code (Recommendation 29A) even though the latter ending is more commonly used in molluscan literature."

- The Australian cerith, *Campanile symbolicum*, now has its own family, Campanilidae.
- The old strombid genus *Terebellum* is now in the family Seraphidae.
- *Distorsio* is out of the Personidae and into the Ranellidae. (This is very interesting because Henning and Hemmen, in their **Ranellidae and Personidae of the World**, 1993, cite Warén and Bouchet [1990: 58] as one of four references for their Personidae classification. Since this takes place only two years later, does this mean that Ponder and Warén, 1988 is already out of date in 1990 and being refuted?) And if so, how is a collector to know when a major work like this expires?
- Coral shells are out of the Coralliophilidae and into the Muricidae.

Vaught, who acknowledges Ponder and Warén for their help with her 1989 Classification of the Living Mollusca, does not follow the last three changes.

Ponder and Warén begin their introductory comments with an interesting quote: "I quite agree with Mr. Swainson in his objection to the use of internal anatomy in classification. External structure is just as important for this purpose; and we know that it is in fact an index to interior organization, which is surely unnecessary in the outline or definitions of a method." —G. Johnston, 1850 (from his *An introduction to Conchology; or, elements of the natural history of molluscous animals*, p.

(Continued on page 19)

WHAT'S A SHELLERS' JAMBOREE? Its a shelly fun fest hosted by the Suncoast Conchologists May 27-29. It's also Friendliness, Camaraderie, Fabulous Food, a Sellers' Market, Programs, a Shell Show and a Parade of Snails. And now it is an award, a financial award to some deserving organization or individual. Hooray for Suncoast Conchologists!

COA HOLDS FIFTH ANNUAL MIDYEAR BOARD MEETING IN ORLANDO

With an organization growing in giant leaps, the COA has more business to transact than can comfortably fit into a convention week, so in 1991 it began having a January meeting as well to handle the increased work load. COA's officers and directors travel from all over the U.S. to attend these intensive one-day work sessions. An abbreviated set of Minutes from the January 1995 meeting, compiled by COA Secretary Linda Brunner, appears below:

1995 COA MIDYEAR BOARD MEETING IN BRIEF

The COA Midyear Board Meeting was again graciously hosted by Linda Koestel and Larry Stiles on January 13-14, 1995 in Apopka and Fern Park, Florida. All board members were present.

Rosalie Taylor of Austin, Texas, was also present and was approved by the board to replace retiring Publicity Director Larry Stiles.

Walter reported that, as of 10/30/94, our total assets were \$55,065.73. All grant monies have been paid and the convention advance has been sent to San Diego. A detailed account will be presented at the 1995 Convention. We have a surplus of about \$6,000 over the previous year. Al Chadwick presented a proposed budget for 1995 and it was approved by the board. It contains a \$3,000 increase in grant monies and a smaller increase in the budget for **American Conchologist**. The board noted that these increases were made possible by the success of the last two annual meetings.

Dave Green is working to update the list of COA Club Representatives. COA will host a luncheon meeting in San Diego for

all known Reps who attend the 1995 meeting. He is also striving to update the program list and will make it available to all clubs when it is complete.

Lynn Scheu, in conjunction with the Editorial Board, will be adding an advertising option to **American Conchologist**, with final details in the magazine. She also announced that, due to increasing demand for advertising space, the magazine will increase to 32 pages. Not only will this afford more ad space, but it will also afford more article and photo space. Presently we can afford to print more color issues, and Lynn is seeking appropriate quality photos to publish. The communications problems with the Editor's Office have been solved with the installation of a dedicated line for the Fax.

Bobbie Houchin's membership update gave a baseline membership of 1300. Currently we have 1,343 memberships on the master list with 466 as yet unpaid for 1995. Second reminder renewal notices are sent in January. Since September, COA has increased by 117 memberships and our international numbers are increasing. The US postal increases will raise her membership expenses.

Lucille Green, COA historian, is continuing to work on the scrapbook record. She asked that members please look at the books and identify pictures or inform her of errors. There is also a need for pictures from 1972-1982.

Betty Lipe is updating the Convention Guidelines whenever new information is received. The 1992-93 index is available on request for US \$1.10 and \$1.41 to Canada. Work is progressing on the 1994 update. Only one entry has been received for the COA Logo contest. The winning entry will appear on the cover of **American Conchologist**.

Dr. R. Tucker Abbott informed the board that the 1995 grant notices and applications have been sent by Jack Odenwald. He will report to the membership at the 1995 convention on grant applications received.

The board approved a special grant to the Bailey-Matthews Shell Museum of \$4,500 to be given in \$1,500 increments over a three-year period. This grant will be used to fund the reception area and will permit COA to have its name and literature on display for visitors to see as they enter the museum.

The board voted to award an honorarium to our banquet speaker of \$150 to help defray living expenses at the convention. The speaker already receives transportation and lodging.

The St. Petersburg Shell Club will host the 1996 convention at St. Pete Beach on July 13-21 at the Trade Winds. Linda Koestel read a letter from the Sanibel-Captiva Shell Club requesting the pleasure of hosting the 1997 annual meeting, COA's 25th anniversary, at the Sundial Beach and Tennis Resort. Pending room cost and bourse space, the board accepted the request with the stipulation that COA is concerned about the live shelling ban at Sanibel.

The board was advised that a petition is being circulated to allow individuals to sell and trade at the annual meetings.

The board deemed that no action was necessary at this time. There is nothing in COA to prohibit an exchange of shells between members, and the mechanisms for any member to sell shells are already in place.

Linda Koestel left us with a request when we adjourned at 4:55 p.m.: that we be specific when we refer to a board member named Linda.

— Linda Brunner, Secretary

PUBLICATIONS ON FOSSIL MOLLUSCS

(Continued from page 10)

artist and shell and fossil collector [see profile of John in **American Conchologist** 16(3):17], John included lots of fossil mollusks, including *Ecphora* and the spectacular *Chesapecten*. 218 of his capable, knowledgeable, and affectionately executed drawings bring charm to the useful little paperback, while one of his Escher-esque fantasies illustrates the cover. They're especially appropriate to illustrate fossils — where else but a fossil bed could one find porpoise vertebrae, ecphoras and teeth from *Carcharocles megalodon* merging and blending in quite this way?

Cretaceous and Paleogene Fossils of North Carolina is a 70 page repeat of a successful format. The cover features a merger, *la Timmerman*, of the sand dollar, *Linthia wilmingtongensis*, and another shark tooth, from the first great white shark species, *Carcharocles auriculatus*. A larger volume, this one has both more species represented and more background information. It covers 6 North Carolina formations from the relevant periods, spanning over 60,000 years. Another overview of the sharks of this time span, more lengthy and in greater depth, is followed by a section by John Timmerman on echinoids, and then 49 pages of his illustrations, including 9 on fossil mollusks. Early scallops, slit shells, cephalopods, oysters, a *Rapana* species, cones and cowries are included, and many of the fossil mollusks are represented in cast form. There are also 14 pages of fossil echinoid species, a number of crabs, corals, brachiopods, bryozoans, bony fish, and marine reptiles. Even a few dinosaurs fossils are pictured — like *Hadrosaurus* (the Duck Bill). Do treat yourself to a copy of both these little guides if you are contemplating fossiling in North Carolina. The North Carolina Shell Club, Richard Chandler, and our own John Timmerman have done amateur fossil hounds a real service in producing this duo. Write The North Carolina Fossil Club, Inc., P.O. Box 2777, Durham, NC 27705. Each book is \$7.00 post paid.

A SHORT HISTORY OF SHELL COLLECTING 1990-2050

by A.E. Carpy

Editor's Note: This recently discovered document is being carefully studied at the Venture 2400 Institute for clues that might explain the dominance of horseshoe crabs in the world's oceans.

1990: Sanibel-Captiva officials institute shell collecting ban. Two live specimens per species per day is the limit.

1994: Annoyed by their inability to enforce the 1990 law, Sanibel officials enact a total live shelling ban. Dead shells may still be taken. Collectors are cautioned to subject any dead shells they take to the "awful smell test."

1995: Alaskan fishermen land 314,000 pounds of snail meat. Claim high protein and low fat.

1995: National Fish and Wildlife Service places seven south-eastern U.S. mussels on the Endangered or Threatened Species List.

1996: Sanibel officials tighten shell ban. No live and only minimal dead collecting.

1996: Shells-R-Us Tours announces its Alaskan Shelling package: 7 nights/8 days to eleven cannery sites for only \$3,750. Brochure teaser: "It takes at least 243 *Boreotrophon stuarti* to make a pound of snail meat."

1997: Congress fails to renew the Clean Air and Clean Water Acts. Does pass the Clean Mind Act which makes it illegal to criticize Congress. Fish and Wildlife immediately places the Liberal on the Endangered Species List. Pollution increases seen in water and air.

2000: Megaglop Oil Corporation states environmental damage is minimal in 57,000,000 gallon oil spill that results when super tanker runs aground after captain tries to back it up the Mississippi River in an attempt to moon New Orleans. "Crude actually helps the shells by adding an additional periostracum," says spokesman. Claim is difficult to dispute as no live shells can be found.

2001: Dealers' lists bloom with special "niger" forms of many Gulf of Mexico species.

2005: Sanibel officials, incensed that tourists are now taking **pictures** of shells off the island, up the penalty for shell possession to summary execution. The first executions, two Snowbirds from Quebec, draw such massive crowds that beach resorts around the nation rush to enact similar legislation. In the parking lot on Sanibel, the Snowbirds' car remains, its left turn signal still blinking.

2010: National Tourism officials convince Congress to create the Environmental Revenue Service (ERS) with powers similar to those of the IRS. The new Shell Cops descend upon all major museums to confiscate specimens of the 11,400 species now on the Endangered Species List. Several ex-shell collectors reported to be parking their cars on some of the most expensive driveway fill ever used.

2012: Landmark point in malacology is reached when the number of Recent genera actually exceeds the number of Recent species. AMU rules that the species *taxonomist* is officially

extinct. In the same year, the ICZN, lamenting the decline of professional journals, rules that official descriptions of new taxa can now be placed on the sides of milk cartons.

2015: Australia finally resolves the many disputes on shell exports and allows the free movement of shells out of the country. Unfortunately, rising water temperatures had effectively killed the Great Barrier Reef by 2010 and there is nothing left to export.

2017: In a series of raids, the ERS arrests several shellers for violation of the Dip Net Laws. Under these regulations a dip net cannot contain more than 500 square centimeters of mesh and must include a Minnow Excluder Device (MED).

2020: The simultaneous collapse of Yankee Station and Torrey Canyon Nuclear plants on opposite coasts is seen as an environmental disaster. "Not so," say power officials. Dealers' lists erupt with "glo-us" forms of many species. Favorite Christmas gift of the year is the unpowered shell night light by Roncho.

2025: The new format for the COA Convention's Bourse is a big success. Instead of buying tables, the dealers stand around in bulky overcoats which they flash open at the approach of a potential customer, whispering, "Hey meester, want to see some seashells?" Only drawback is cost of keeping room temperature at 40° to prevent dealer heatstroke. COA board adopts suggestion that all future conventions be held north of the 44th Parallel, in spite of statistics that show only two shellers live that far north. Convention ends with the slogan, "Next Year in Nome!"

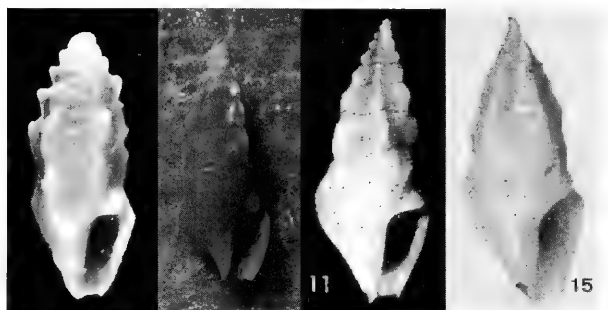
2030: DNA testing is finally extended to molluscs, heralding an era of definitive species identification. Malacologists decide that more than 10 pair differences in a genome constitutes a new species, thus allowing *Leucozonia nassa* to be redefined into 1,400 new species. COA membership falls by 50% in six months.

2035: Major fraud in shelling is disclosed. Philippine carvers and Chinese paste makers now produce more shells than Mother Nature. Alarmed, the Fish and Wildlife Service requires that all captive live mollusks must wear eartags. This proves difficult with gastropods and impossible with bivalves.

2043: Attendees at the COA Convention undertake the annual count of existent and non-protected species available for collection in North American waters. The result is three — all nassas.

2050: The last five members of COA (all of the other members having been arrested for possessing a *Melongena corona* in their personal collections) hold their annual convention in the bathroom of a Maryland rest stop on I-95. They finally pass a resolution protesting the restrictions placed on shell collecting. The vote is 3 to 2. Forwarding of the resolution is tabled until a second resolution is passed declaring Maryland to be north of Latitude 44.

Funny? Maybe. When's the last time you took a stand?



From left: Shasky's turritid, Pearson's turritid, Cernohorsky's *Clavus opalus*, Springsteen and Leobrera's *Clavus (Clavus) opalus*.

MUSINGS OF AN ITINERANT MALACOLOGIST

Engina lanceolata (Kuroda and Habe, 1971),
Plagiostropha opalus (Reeve, 1845), and *Bacula lamberti* (Souverbie, 1875)

by Don Shasky

The front cover photographs by Dr. G. Thomas Watters and the "WHAT IS IT?" article by Gloria Pearson in the December 1994 *American Conchologist* are of great interest to me.

Dr. Watters' photograph illustrates a specimen of *Engina lanceolata* (Kuroda and Habe, 1971) from Bohol Straits, Philippines. This taxon was again described as *Engina mactanensis* Cernohorsky, 1985.* The type lot was mostly from Mactan Island, Philippines. Kuroda and Habe placed this species in the genus *Enzinopsis* Iredale, 1940. Ponder (1972) somewhat relegated *Enzinopsis* to the position of a subgenus of *Engina*. The type locality for *E. lanceolata* is from 18 meters, Warishima E, Honshu, Japan. The only other reference I am aware of for this species is Springsteen and Leobrera's *Shells of the Philippines*.

I have collected *E. lanceolata* from the following locations:

- 1) 11-33m on coral, North side of Sipidan Island, Sabah, Malaysia. 6 specimens.
- 2) 24-28m on coral, on a sea mount off Amenwanot Island, in the lagoon, Majuro Atoll, Marshall Islands. 1 specimen.
- 3) 17-26m on coral, outside the reef, N.E. side of Ashmore Reef, Timor Sea, Western Australia. 1 specimen.
- 4) In addition, I have 1 specimen from Palau, taken on a wall dive by Doug von Kriegelstein at a depth of 21-40 m.

The "WHAT IS IT?" column by Gloria Pearson reillustrated my "unnamed" turritid, originally figured in the Sept. 1993 *American Conchologist*. COA member Donn Tippet identified it as *Plagiostropha opalus* (March 1994). The genus *Plagiostropha* was erected by Melvill in 1927 for a species from an unknown locality which he named *Plagiostropha quintuplex*. Powell (1966) relegated *Plagiostropha* to a subgenus of *Clavus*.

Wells (1991) resurrected *Plagiostropha* to a full genus. He also figured *P. flexus* (Shuto, 1983) and described *P. sinecosta* as a new species. The type locality for *P. flexus* is 160 km north of Croker Island, Northern Territory, Australia at a depth

of 124 meters. For *P. sinecosta* the type locality is 210 km north of Port Hedland, Western Australia at a depth of 201 m.

Wells recognizes five species of *Plagiostropha*: *opalus*, *ebur*, *quintuplex*, *flexus*, and *sinecosta*. Based on my own material, listed below, I am unable to separate *P. opalus* and *P. quintuplex*.

Melvill's closing paragraph in the description of *P. quintuplex* is rather interesting. It reads:

"I may add that *opalus* has a wide distribution in the Eastern tropics. It was described originally from Cayagan Island, Mindanao, Philippines, but is reported by Schepman (Siboga Expedition, p. 416) from the east coast of New Guinea and Timor. It was only once dredged by Mr. F. W. Townsend in the Persian Gulf at 45 fathoms. *Ebur* is presumably West Indian; Tryon reports it from both St. Thomas and St. Croix."

Cernohorsky (1978) and Springsteen and Leobrera (1986) figure what they call *P. opalus*, which, in my opinion, is *P. ebur*. Additionally, Cernohorsky placed *ebur* as a synonym of *opalus*. Reeve's descriptions of the two species follow:

P. opalus:

Shell oblong ovate, five sided, thick, smooth, longitudinally ribbed, ribs obliquely continuous one under the other, slightly nodose, narrow as if pinched, interstices between the ribs flatly concave, aperture small, sinus large, deep, ivory white, shining, interstices between the ribs brown.

P. ebur:

Shell oblong ovate, five sided, thick, spire acuminate, longitudinally ribbed, ribs obliquely continuous one under the other, transversely striated, striae conspicuous towards the base; sinus large, deep; ivory white. Resembles the preceding, but striated, and more opaque.

Pearson raises the question about the color of my shell. She illustrates a specimen from Kwajalein Atoll which is brown. Colorwise, *P. opalus* is quite variable, as the following will show. The first five lots I collected SCUBA diving. The sixth lot was a gift from COA member Dr. Emilio García.

- 1) 15-27m on coral, Ine Island, Arno Atoll, Marshall Islands. Two specimens, both coral red with white tips on the axial ribs. One is the figured specimen referred to above.
- 2) 15-32m on coral, wall dive, outer reef, Ine Island, Arno Atoll, Marshall Islands. Two specimens, one white, the other very light pink.
- 3) 14-25m on coral, wall dive, 11 miles east of Laura, Majuro Atoll, Marshall Islands. One specimen, light brown.
- 4) 11-17m on coral, North side Cartier Island, Timor Sea, N.W. Western Australia. One specimen, brown with white tips on the axial ribs.
- 5) 15-26.5m on coral, west side Cassini Island, N. Kimberly Coast, Western Australia. One specimen, ivory white.
- 6) No depth recorded. Punta Engaño, Mactan Island, Cebu, Philippines. Six specimens, all brown with white tips on the axial ribs.

Can anyone confirm Tryon's statement that *P. ebur* is found in the Caribbean fauna?

Pearson's mystery shell (figure 6) is the eulimid *Bacula lamberti* (Souverbie, 1875). The type locality is New Caledonia. Souverbie erected the subgenus *Subeulima* for this taxon. Dr. Anders Warén has synonymized *Subeulima* with *Bacula* H. and A. Adams, 1863.

Pearson's shell shows a slight curvature which is normal for this species. There is a "monstruous" form which has a grossly enlarged body whorl and a marked curve of the

*Dr. Watters also told us, at the time he submitted the December photographs, that he believed W.O. Cernohorsky had described this species as *E. mactanensis* but that he had never seen the description.



Pearson's Mystery Shell

teleoconch. This has been illustrated by Ian Loch, curator of molluscs at the Australian Museum, Sydney. His shell is from Tiahura Island, Moorea, French Polynesia.

I have collected three lots of *B. lamberti* in Tahiti and one lot from N.W. Western Australia. Some of the shells

are the "monstruouse" form. All of my specimens are now with Dr. Warén in Stockholm, Sweden; consequently, my collecting data is not at hand. I believe that all of these were taken in depths of 15-23m.

Please let me challenge all of you to collect microscopic shells. The color patterns and exotic shapes of some are truly works of art. Range extensions and undescribed species are frequently found. If any of you have doubts about this, wait until Bunny and George Cook corner you next June in San Diego.

Acknowledgements: I wish to thank Dr. Hank Chaney for supplying references, Dr. William Emerson for his helpful suggestions, Donn Tippet for identifying my "unnamed" turrid, and Lynn Scheu for numerous favors.

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CHANGE IN THE COA BYLAWS:

At the Annual Meeting of the COA Convention in Corpus Christi, Texas, the membership voted to accept the recommendation of the Board of Directors to change Sec. D. of Chapter 3 of the Bylaws to read as follows:

Sec. D. The election shall shall be conducted in accordance with the current edition of Robert's Rules of Order.

All members should correct their copy of the Bylaws to read as above. This is the second change to the 03/01/92 Revision to the Constitution and Bylaws.

WHAT IT IS

Gloria Pearson's "WHAT IS IT?" article in the December *American Conchologist* has spawned a great deal of interest. See also Don Shasky's article, this issue, "Musings of an Itinerant Malacologist." We have a feeling this isn't the last we'll hear about this sticky matter of the identification of some very small shells. Stay tuned.

A Letter From Donn Tippet . . .

I am prompted to write, having read Gloria Pearson's article in the December *American Conchologist* in which she discusses Shasky's "mystery turrid"....which I had sent you a note about.... In it I identified the shell as a specimen of Reeve's *Pleurotoma opalus*. Mrs. Pearson questions this identification, providing a photo of a similar shell [from the Pearson collection], plus referring to figures of *Clavus opalus* in both Cernohorsky and Springsteen and Leobrera. (Note: the Cernohorsky reference should read "plate 54," not "4.") She further wonders about the appearance of *Pleurotoma* (misspelled "Pleurobema" in the article) *ebur* Reeve.

Reeve published both taxa in his classic *Conchologica Iconica*, volume I, plate 30, December, 1845. Species 274 is *opalus* and 275 is *ebur*. Reeve used the genus "*Pleurotoma*" for these species as, indeed, he did for all turrids, choosing to spurn the other turrid genera available to him. (His use of the genus "*Mangelia*" dates from 1846 and is in volume III of *Conch. Icon*.)

Although I have not seen type material, Reeve's (actually Sowerby's) figures are, in this instance, fairly good, and serve adequately for identification. I am enclosing photos of the illustrations. It is unfortunate that they are in black and white, since they are in color in the book; however, Reeve's descriptions reasonably indicate their coloration. The figures are magnified 2X in the book. Thus, *opalus* is 19mm, meaning the shell is near 10mm, and *ebur* is about 17mm, or about 8.5mm for the shell. As can be seen, there is very little difference between the two. Reeve comments that *ebur* resembles *opalus* but is "striated," that is, with spiral striae, as in Cernohorsky's figure, and is "more opaque" — ivory white. The interspaces between the axial ribs of *opalus* are "fleshy brown."

There is some variability of protrusion of the small tubercles at the tops of the ribs. They are most prominent in *opalus* and approach the degree shown in Shasky's photo. My specimens, from the Fijis, are essentially identical to the illustration of *opalus*. It might be noted that there is no spiral groove as Pearson suggests. This appears to be a result of color shading on the shell surface in Shasky's photo. There is little question as to the identification of Shasky's shell. The slightly greater prominence of the tubercles on his shell are certainly within species limits. Also there is apical wearing on his shell with resultant shortening of the spire point which accentuates the appearance of the tubercles' prominence.

This leaves a question as regards the correct identification of the shells pictured by Cernohorsky and Springsteen and Leobrera, as well as Mrs. Pearson's shell. In addition to the



Reeve's figures of *Pleurotoma opalus* and *P. ebur*.

spiral striation and color they show lesser degrees of tubercle prominence, most evident in Springsteen and Leobrera's, but are the same otherwise except for slight failure of the axial ribs to line up under each other, whorl to whorl. This happens occasionally, even in such constant species as those in the genera *Ithycythara* and *Pseudoraphitoma*. Cernohorsky's shell certainly is reasonably identified as *ebur*, and there would seem to be little reason to object to this.

REFERENCE: Wells, F.E. 1993. A revision of the Recent Australian species of turrid genera *Clavus*, *Plagiostropha*, and *Tylotiella* (Mollusca: Gastropoda). *J. Malac. Soc. Aust.* 12:1-33, 6 pls.

One From Thora Whitehead...

I'm writing just now because I think I may have got the first step along the way with the Pearson mystery shell, fig.6, p.9. I believe this treasure is in the family Eulimidae, genus *Bacula*. Shells of this genus do not seem to be well known. Most are of small size, similar to the Pearson shells. Two species I have seen figured are:

Bacula lamberti (Souverbie, 1875) size 4-20mm. From far North Queensland and New Caledonia. Figured **Australian Shell News** No. 66, May 1989, and No. 81, Feb. 1993. [See also Don Shasky's "Musings."]

Bacula morisyuichiroi (Habe, 1968) size 4 mm. From Tsuchihama, Amami Islands. Figured in **The Chiribotan**, vol. 22, no. 2, Oct. 1991.

Mrs Pearson's specimens and the characters she describes are also found in the two species above. However, both are

much curved in their form of growth, while Mrs. Pearson's shells are much less curved. Here's hoping that someone will be able to identify the mystery shells to species.

172 Burbong St., Chapel Hill, Brisbane, Queensland, Australia 4069

Liniphora restis Laseron

Subeulima morisyuichiroi Habe, 1968



And Another From Hiroshi Munekata.

I just had the December '94 issue. On its page 9 I find photographs of some minute shells from Kwajalein under a headline, "What Is It?" Two of these (Fig. 5 and Fig. 6) are identifiable. Both appeared in the Japanese Malacological Society's **Venus** in the past, so I am sending copies:

1. Sadao Kosuge: Triphoridae from Amami Islands, 1962. (covering Fig. 5) The shell may be *Liniphora restis* Laseron, 1956 (Pl. 7, Fig. 6)...

2. Dr. Tadashige Habe: Description of *Subeulima morisyuichiroi* (Sp. nov.). 1968 (Fig. 6).

I will be glad if this information can be of some help with Gloria Pearson and other members.

3385 Kita-Toyama, Komaki-Shi, Aichi-ken 485, Japan

BOOK REVIEW

Bivalved Seashells of the Red Sea by P. Graham Oliver, with illustrations by Chris Meechan and photographs by Kevin Thomas. Published by Verlag Christa Hemmen and the National Museum of Wales. 330 pages, 46 color plates. \$120.

If you are a serious collector with an interest in bivalves or shells in general from the Red Sea area, **Bivalved Seashells of the Red Sea** is a necessary addition to your library. The value of a shell reference book becomes apparent when one uses it extensively in identifying and cataloging a collection. I frequently find errors, even in books with rave reviews, when I work with a reference for any length of time. I purchased this book because of a recent trip to the Red Sea, so I have spent hours within its pages. This is the most error-free shell book that I have read. I have only found a couple of mistakes; for example, Plate 12, Fig. 7a & b, shows *Pecten erythraeensis* at 70.5 mm, while the discussion and description of *P. erythraeensis* on page 78 says, "Shell to 60 mm."

There is an informal 2 page Historical Review of Bivalve Studies in the Red Sea dating back to the 16th century. Following the color plates is an extensive 10 1/3 page bibliography. The 46 color plates are of excellent quality and show both external and internal views of each species. The captions give name, author, date, size of pictured specimen and page number of the textual treatment. It also lists the museum where the holotype is deposited. Or does it? First, where is (MNW) or (MNH)? Most books define museum abbreviations, eg., AMNH is the American Museum of Natural History. This book does not. And since there is no plate explanation, I am not sure if the museum listed holds the holotype or the pictured specimen. I doubt if all the pictured specimens are the holotypes because they are uniformly of too good a quality.

Ten pages and 15 black and white figures, comprised of 74 individual pictures, explain in detail the terms used to describe a bivalve shell. Eight pages and 87 black and white figures (92 individual pictures) are used to illustrate a key to the higher taxa of bivalves. Six pages and 27 black and white figures are used to key and describe the superfamilies of the Protobranchia. Five hundred and forty-seven more black and white figures key and describe the other superfamilies, families, genera and species. Frequently a portion of shell sculpture is enlarged to show a difference between similar species.

Every genus has its type species noted, followed by a description of the genus and remarks. Each species has a detailed list of synonymies and references (often numbering more than 20) including author, date, and publication with plate and figure numbers. The species is then described, with the maximum size given; the habitat and distribution are noted and, lastly, there are Remarks on the species.

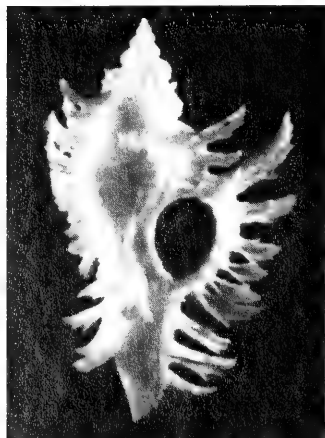
It is always of interest to me to know whether or not a species is endemic. So many books treating limited geographical areas only cite locations within that area. But, in **Bivalved Seashells of the Red Sea**, the local range of each species is followed by the global range to give a more complete distributional picture. For example, *Perna picta* (Born, 1778) Distribution: Dahlak, Kameran, Obock, Perim, Aden, Tadjourah. [S. Red Sea - W. Indian Ocean]. However, I strongly recommend a map. How many of us know where Kameran, Obock and Perim are? As I readied for my Egyptian trip, I was surprised at how many people did not even know where the Red Sea is. A first class book such as this deserves a map with bathymetric detail showing deep water, mud flats, coral reefs, etc.

Bivalved Seashells of the Red Sea has beautiful color plates, is crammed full of useful, clear, black and white illustrations, and is scientifically complete, with types, synonymies, references, detailed descriptions, maximum sizes and full range information.

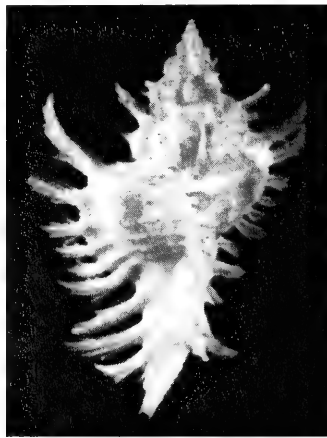
—Gene Everson

THE GENUS *CHICOREUS* IN THE WESTERN ATLANTIC

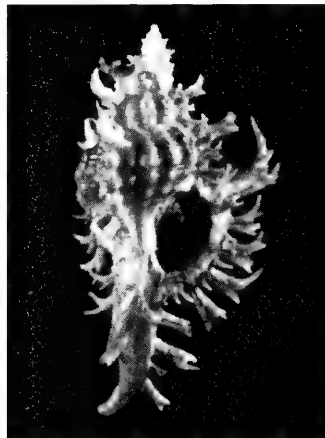
by Kevan and Linda Sunderland



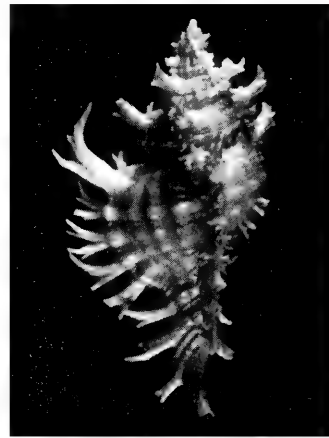
Chicoreus rachelcarsoni Petuch, 1987. 44mm. 180', Big Rock" area w. of DeSoto Canyon, Alabama.



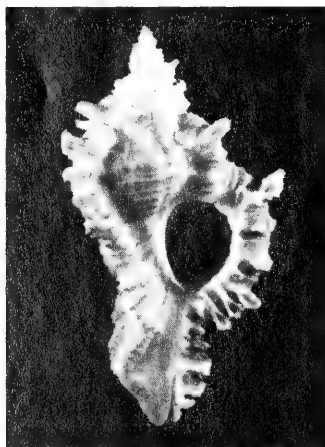
C. rachelcarsoni, dorsal view.



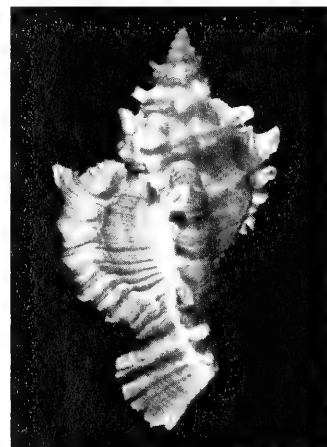
Chicoreus cosmani Abbott & Finlay, 1979. 55mm. 110', north coast, Jamaica. Reef.



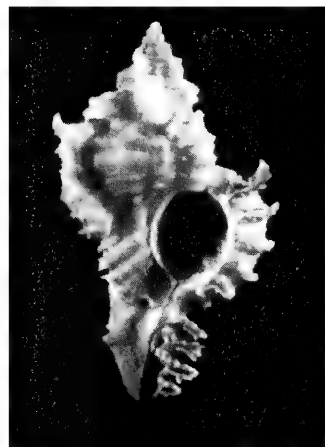
C. cosmani, dorsal view.



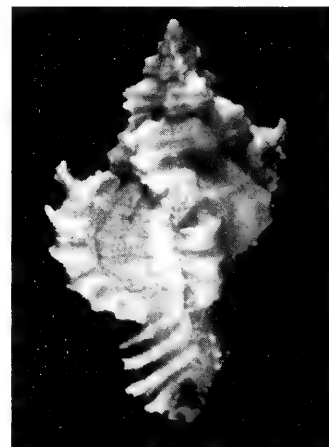
Chicoreus mergus Vokes, 1974. 57mm. 200', off bank, E. Honduras. Lobster traps.



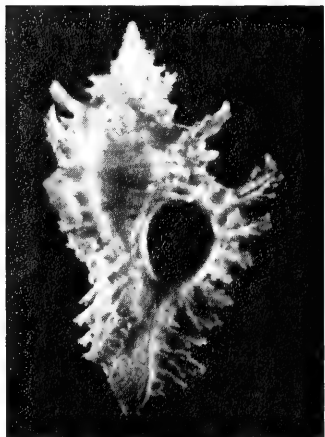
C. mergus, dorsal view.



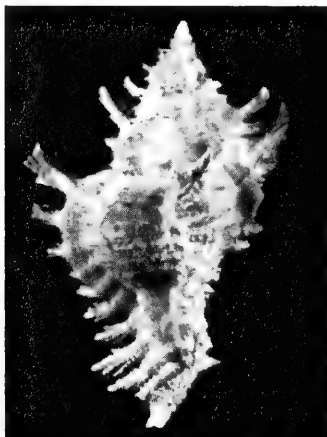
Chicoreus emilyae Petuch, 1987. 48mm. 200', off bank, E. Honduras. Lobster traps.



C. emilyae, dorsal view.



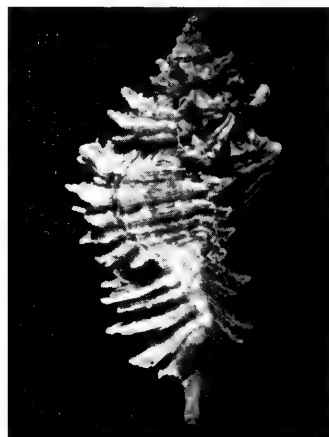
Chicoreus emilyae Petuch, 1987. 45mm. 120', Porto Bello, Panama. Dredge.



C. emilyae, dorsal view.

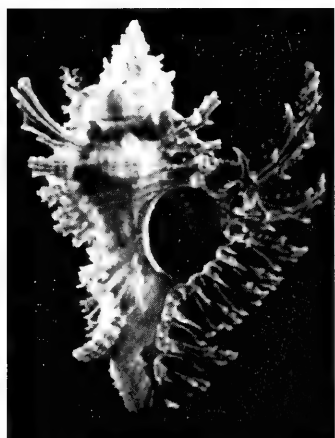


Chicoreus hilli Petuch, 1990. 58mm. 65m, Porto Bello, Panama. Dredge, mud and rubble.



Chicoreus florifer Reeve, 1846. 74mm. 85', off Destin, FL. ex: T. Stewart Coll'n.

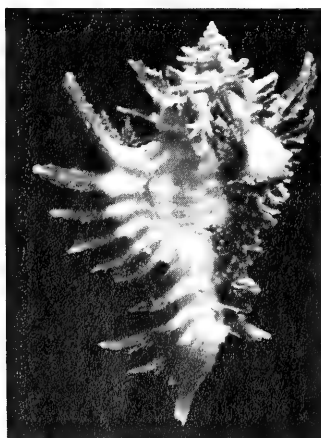
The intent of these centerfolds is not necessarily to distinguish among valid and invalid species, but to provide illustrations of taxa not popularly available, for the information of the collector.



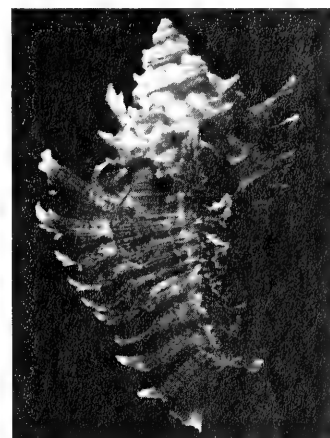
Chicoreus florifer Reeve, 1846. 49mm. 3', Grand Bahama Island. On mussels.



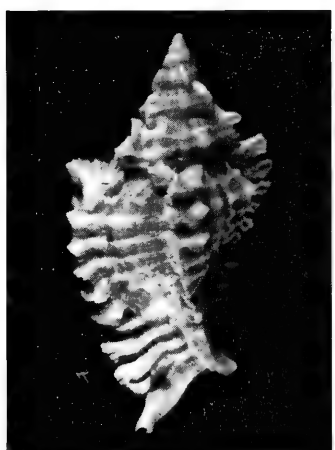
C. florifer, dorsal view.



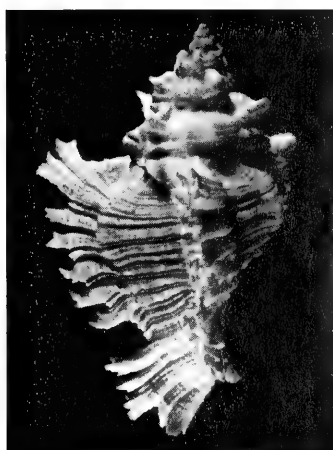
Chicoreus florifer Reeve, 1846. 67mm. 150', off Key West Fl. Lobster trap.



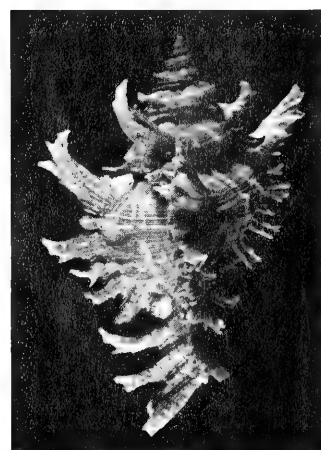
Chicoreus florifer Reeve, 1846. 69mm. 10', Governor's Harbour, Eleuthera, Bahamas. Grass.



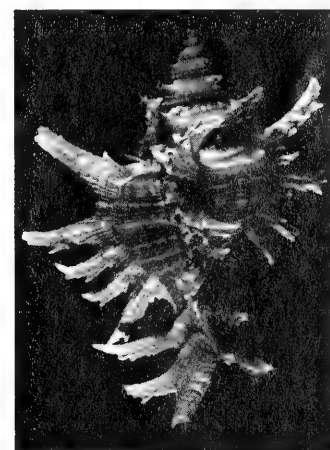
Chicoreus florifer Reeve, 1846. 61mm. 2', off Sanbel Island, FL. On mussels.



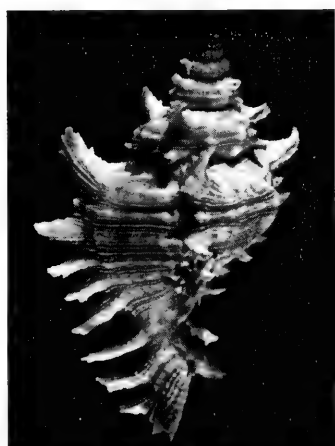
Chicoreus brevifrons Lamarck, 1822. 90mm. 50', Isla de Margarita, Venezuela. Reef.



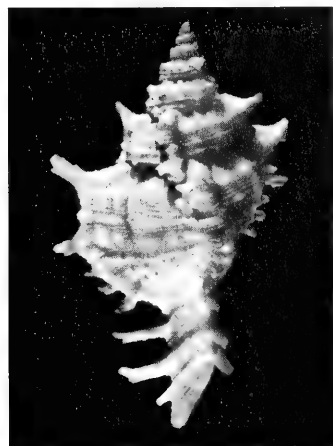
Chicoreus brevifrons Lamarck, 1822. 102mm. 160', Isla de Margarita, Venezuela. Dredge.



Chicoreus brevifrons Lamarck, 1822. 77mm. 4', NW Puerto Rico. Mangroves.



Chicoreus brevifrons Lamarck, 1822. 71mm. 3' Near Malmok, Aruba. Mud and rubble.



Chicoreus brevifrons Lamarck, 1822. 64mm. 200' off Colombia/Venezuela border. Shrimper.

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 ———. 1990. Cenozoic Muricidae of the western Atlantic region. Part VIII *Murex* s.s., *Haustellum*, *Chicoreus*, and *Hexaplex*: Additions and Corrections. *Tulane Stud. Geol. Paleont.* 23(1-3): 1-96.

THE CONTINUING SAGA OF MUREX PEASEI TRYON

by Emily H. Vokes

The species originally named *Murex foveolatus* by Pease (1869, p. 83, pl. 8, fig. 3) and subsequently renamed *Murex peasei* by Tryon (1880, p. 129; new name for *M. foveolatus* Pease non Hinds, 1844) has a more than usually convoluted history.

Our story begins when Pease named a small shell (ca. 15mm in height) *Murex foveolatus*, stating that it came from "La Paz, in sinu Californico." As the name "*Murex foveolatus*" previously had been used by Hinds for the California species now assigned to *Ocenebra*, Tryon renamed the preoccupied taxon as *M. peasei* and noted: "I copy his [Pease's] figure which does not at all agree with a specimen sent to me by him, the latter is too like *M. erosus* Brod."

On the basis of the rather poor illustration (reproduced here, fig. 1) and the La Paz locality, workers (e.g., Keen, 1971, p. 532, fig. 1029) identified a species occurring along the west coast of tropical America (from Mexico to Panama) as *M. peasei*. However, when Radwin and D'Attilio did their monumental study of the Muricidae of the world, they noted (1976, p. 152) that the specimen in the collections of the Academy of Natural Sciences in Philadelphia (fig. 3c) labeled as "type" of *M. peasei* is not the same as the West Coast species, and so they named the latter *Favartia poormani*.

I took exception to their decision (Vokes, 1984), noting that the shell at the Academy of Natural Sciences was obviously not the holotype but was the specimen that Pease had sent to Tryon, and I did not think it is the same species as Pease had illustrated. At that time, I expressed the opinion that specimens (especially that one illustrated by Keen, *ibid.*) of *F. poormani* more nearly resemble the Pease illustration than does the so-called "type," and it was my feeling that the West Coast shell really was *M. peasei*, for which *F. poormani* would be an unnecessary name.

However, Myers and D'Attilio (1989, p. 155) succeeded in convincing me that the two are not the same and, therefore, the West Coast shell is correctly denominated *F. poormani* (which I assigned in the aforementioned paper [1984, p. 161] to the genus [or subgenus] *Pygmaepterys* Vokes, 1978). In this same paper Myers and D'Attilio designated the Academy of Natural Sciences specimen (ANSP 36144) as the lectotype of *M. peasei*, as it seemed to be the only extant syntype. Pease (1869, p. 84) had stated: "All the specimens of the above [*M. foveolatus*] received were very much encrusted, with the exception of the one figured"; therefore, the Tryon specimen is almost certainly a part of the type lot. Inasmuch as the **Code of Zoological Nomenclature** [Art. 74 (a)] says "any author may designate one of the syntypes as the lectotype," and since it seems clear that the ANSP specimen was one of the original type lot, this designation is valid even though the specimen is not the one illustrated by Pease.

Although I was not happy with this resolution of the problem, for I was still convinced that the shell illustrated by Pease and the specimen at the Academy are not the same species, there was not a whole lot I could do about it. Thus, as of 1989, this was the situation—the only known specimen of *M. peasei* was a shell that to me bore only a generic resemblance to the original illustration given by Pease.

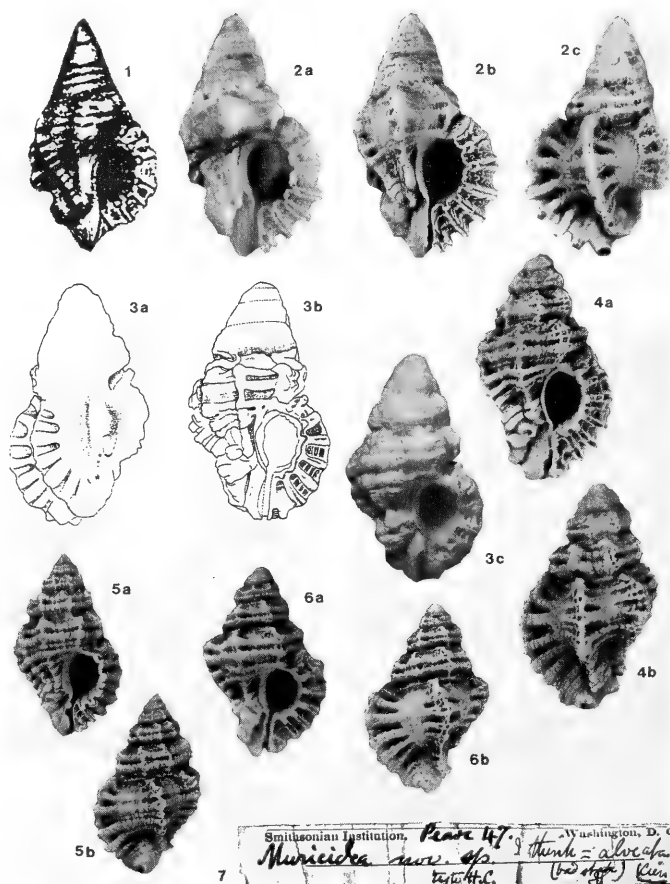
Then, in the summer of 1993, I visited the Museum of Comparative Zoology, Harvard University, for the purpose of scouring the collections in search of another missing holotype, that of *Murex carnicolor* Clench and Pérez Farfante, 1945 (see Vokes, 1992, p. 50, for discussion). Unfortunately, I did not discover the latter, which remains missing, but what I did find, tucked away in a bottom drawer with only a museum number (MCZ 304068) but

no identification, was a vial with two shells in it. When I examined them, I immediately recognized the larger as the long-lost illustrated specimen of *M. peasei* (fig. 2). It is a very distinctive shell, marked by a strong color band at the base of the body whorl (see fig. 2a), but extremely worn.

How these two specimens came to be in the collections of the MCZ is a mystery, for the label in the vial with the shells says "Smithsonian Institution." This label (reproduced here, fig. 7) reads "Pease 47," although what this number refers to is not known. Originally it was labeled as *Muricidea* nov. sp. teste H.C. [?Hugh Cuming, ?Hippolyte Crosse], but another hand has added the comment, "I think = *alveata* Kiener (bad shape)." This label probably precedes the description of the species for Pease added after the description the statement: "The species nearest allied is *M. alveatus* Kiener."

The smaller MCZ specimen (fig. 4) is somewhat better preserved than either the illustrated shell or the ANSP specimen, the latter having been illustrated by Radwin and D'Attilio (1976, pl. 29, fig. 6), Vokes (1984, fig. 2), Cernohorsky (1985, fig. 1) and, most recently, by Myers and D'Attilio (1989, figs. 1, 2 reproduced here as figs. 3a, 3b). In addition, also in the MCZ collections, there is a fourth specimen (MCZ 304069), originally from the Pease Collection, labeled "*Murex radicans* Hinds," which is also referable to this same species and is better preserved than any of the others (fig. 5). Comparing the four examples I have come to realize that they do, in fact, all represent the same species.

But what species is it? Walter Cernohorsky (1985, p. 13) concluded that the mysterious *F. peasei* is no more than an adult of the Hawaiian species *F. garrettii* (Pease, 1868; new name for *Murex exigua* Garrett, 1857, non Broderip, 1833). He correctly notes that, although Radwin and D'Attilio (1976, p. 149) state *F.*



garrettii attains a height of only 5mm, it actually is larger. In fact, it was originally described (Garrett, 1857, p. 102) as being "5 lines" (= 10.5mm). Cernohorsky figured examples 10.6, 11.7, and 12.8mm in height. D'Attilio (1988) also has done a more detailed study of *F. garrettii*, giving a beautiful drawing of a specimen measuring 6mm in height.

So, is *F. peasei* just a synonym of the Hawaiian *F. garrettii*? It is possible, but I am not convinced. Comparison of the Pease material with Cernohorsky's and D'Attilio's illustrations and specimens of *F. garrettii* in my collection shows that *F. garrettii* is a more inflated shell, which loses the spiral ornamentation at an earlier stage than does *F. peasei* (compare figures 5 and 6, specimens of almost exactly the same size).

Therefore, until someone recognizes an example with good locality data that matches the Pease specimens, we still do not know the ending of the story. Although probably Indo-Pacific in origin, even this is not certain; the Indo-Pacific locality data cited by Radwin and D'Attilio (1976, p. 152, based on the specimen in their pl. 29, fig. 7) refers to another species, subsequently named *F. ponderi* Myers and D'Attilio (1989, p. 156, figs. 3-8). Thus, there is still an as-yet unlocalized species of *Favartia* for which the name *F. peasei* (Tryon) is available.

I would like to acknowledge my gratitude to Silvard P. Kool and Kenneth J. Boss, of the Museum of Comparative Zoology, Harvard University, for the opportunity to examine the collections and to borrow the Pease material. Bob Foster, Abbey Specimen Shells, Santa Barbara, California, kindly provided the figured specimen of *F. garrettii*, as well as others in my collection. William D. Pitt, Sacramento, California, helped solve the mystery of the duplicate pagination for the Garrett article in the **Proceedings of the California Academy of Sciences**.

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Figure 1. *Murex foveolatus* Pease, 1869, American Journal of Conchology, v. 5, pl. 8, fig. 3 (X4). Figure 2. *Murex peasei* Tryon, 1880 (paralectotype — MCZ 304068A); height 16.0mm, diameter 9.5mm. A) shell not whitened, to show color pattern; B,C) shell whitened to show details of ornamentation (all X 4). Figure 3. *Murex peasei* Tryon, 1880 (lectotype — ANSP 36144); height 12.6mm, diameter 6.9mm. A, B) Myers and D'Attilio, 1989, figs. 1,2; C) specimen (all X 5). Figure 4. *Murex peasei* Tryon, 1880 (paralectotype — MCZ 304068B); height 11.7mm, diameter 7.1mm (X 5). Figure 5. "*Murex radicans* Hinds," Pease Coll. (MCZ 304069); height 9.6mm, diameter 5.7mm (X 5). Figure 6. *Favartia garrettii* (Pease, 1868); height 9.7mm, diameter 6.4mm; Oahu, Hawaii, 30 meters (Vokes collection) (X5). Figure 7. Original label with MCZ specimens of *Murex foveolatus* Pease (enlarged).

ONE MAN'S OPINION

(Continued from page 10)

540). (No, G. Johnston is not a pen name for E. Petuch.) Now I don't want to be an old fossil in agreeing with that quote 100% and advocating ignoring anatomical studies in their entirety, but enough is enough. The traditional family Buccinidae is already a very complex group. Adding to this chowder the tiny nassariids, the spiny kings crowns and the giant Horse Conch is an idea most collectors will find hard to swallow. And if we classify 100% by anatomical characters, are we just going to ignore all those species known only from dead shells? Hmmm?

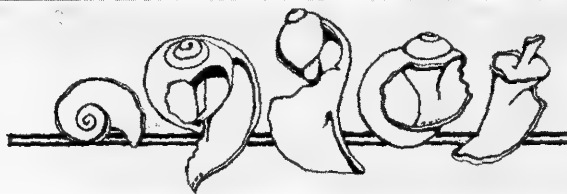
Today I received the latest issue, number 272, of **La Conchiglia**. The very first article was on *Metula vicdani* Kosuge, 1989, by Mario Angioy, with a beautiful color picture of this rare shell. He says: "*M. vicdani* is certainly the rarest species of a genus that, according to most recent systematics, must be placed in the family Fascioliariidae, subfamily Colubrariinae." I have long put *Metula* in the Buccinidae, and it is certainly there if you accept Ponder and Warén. But Mr. Angioy and the editorial staff of **La Conchiglia** must have good reason and a trusted reference (no references were given) to state that Fascioliariidae is the latest home for *Metula*. Vaught is the only reference I know that places *Metula* in the Fascioliariidae, and the respected scientist who proofread for Vaught told me that was a mistake.

Not very long ago, protoconchs were THE thing for assigning shells to similar groups, then radulae were in vogue. Now it's osphradial characters? Get real! My last two exhibits were Worldwide Fascioliariidae and Worldwide Buccinidae, yet if someone showed me a common spindle shell or a neptune and asked me what family either was in, I'd have to hesitate and sputter, "Do you mean today, or last week? Or according to Goren or Hoyle?" Two years ago a shell show judge jumped on me with both feet because one of my shells was not shown under a new genus named in a recent and seemingly (to me) minor shell book. And he held me accountable for this even though this book was not listed in my reference bibliography of 30+ titles. How does the collector know whom to follow, who's in and who's out? Personally, I am tired of buying new shell books every year just to see what's the latest scheme some PhD has dreamed up for classifying shells.

A question inherent in all this is: Just how are collectors to keep abreast of these changes and know which to accept and which to ignore? How is a collector to stay current? Should there perhaps be some standard taxonomic reference established for collectors that is reviewed and revised periodically in light of the latest scientific thought? Shell show judges, many of them scientists, certainly shouldn't hold the collector responsible for making these decisions and distinctions on his own.

ADDENDUM: Just as I concluded writing my opinion on using osphradial and penis characteristics to combine several popular families into one, I received a scientific paper which moves many turrid genera into the Conidae. It also explains why the Terebridae was divided into two families in 1960, and the division was strengthened and expanded in 1990 (Have you seen this in popular books or periodicals?), but now is returned to the Terebridae in separate subfamilies. Yes, you guessed it — by a brand new set of anatomical features. I will report on this in June.

Flotsam and Jetsam



Remember that we told you those yummy **APALACHICOLA BAY OYSTERS** would be in short supply over the holidays? (Dec. "Flotsam And Jetsam") Well it seems as if the supply wasn't short enough. We read in the **Houston Conchology Society Newsletter** (who got it from the Jan. 7 **Houston Chronicle**) that at least 60 people became ill over the New Year's weekend after eating Apalachicola Bay oysters. The causative organism wasn't pinpointed but the Bay was closed to oyster fishing again. We'll be feeling the effects of the summer flooding in the southeast for a long time to come.

MEDICAL MARINE LIFE is striking a few blows against one of mankind's oldest plagues, osteoarthritis, according to the Palm Beach County **Seafari**. It seems shark cartilage and sea cucumber are sold in health food stores as nutritional supplements to combat this form of arthritis, and the green-lipped mussel from New Zealand contains a compound called Seatone which is also used in the treatment of the crippling disease. Nature seems to hold a remedy for a lot of the ills that afflict mankind. But we'd do well to remember that without the natural explorative curiosity of the human animal about the natural world around him, many such modern medical miracles would never have become realities. Natural history hobbies like shell collecting stimulate and feed that curiosity. Let's keep them alive and well too.

WALTER SAGE showed up at the Mid-Year Board Meeting in Orlando with a whole new look. No, he hasn't given up shelly fabrics! But his recent facial surgery has wrought some changes. Due to the fact that opening his mouth and chewing have been difficult, he has dropped a few pounds. And his svelte new shape is augmented by an addition, a full white beard! See for yourselves: A before and after picture. The first was taken at the Corpus Christi Convention in July. The second was snapped at the Orlando meeting in January. We like it, Walter!



HAVE YOU MADE YOUR DONATION YET?

We are pleased to announce that the 23rd Annual Convention of the Conchologists of America will be held in San Diego, California, from June 23-28, 1995, and will once again be hosted by the San Diego Shell Club. But we need your help!

Each year all of the items for auction are donated by COA members, dealers, publishers and collectors like yourself, who support the goals of COA. Proceeds from the auction help fund the COA Grant Awards for scholarships, publications on molluscs, the COA Grand Trophy Awards presented at over 26 shell shows, and publication of the **American Conchologist**.

Because the annual auction is our primary fund-raising activity, your donation is very important! It will not only help the COA but will also call attention to you as a collector or dealer. Your name and address, along with a special "Thank You" will be included in the list of contributors in the 1995 convention program.

Only through the generosity of donors like yourself can we hope to make this year's auction a successful one. So, at this time, the 1995 Auction Committee is requesting donations for the main auction, silent auction, and raffles. Donation of such

items as rare shells, shell books, fossil shells, corals, shell art, and shell photography would be greatly appreciated. Please keep in mind that high quality specimens with good data bring better bids. It would also be helpful to note the value with each item.

We are requesting that donation materials arrive in San Diego no later than the end of May. This should allow adequate preparation time for a successful auction. The sooner, the better! Donation items may be sent to:

Larry Buck
13440 Portofino Drive
Del Mar, CA 92014
(619) 792-5404

or **Kim Hutsell**
5804 Lauretta St., #2
San Diego, CA 92110-1670
(619) 294-3914

If you have questions about donations or the 1995 COA Convention, please feel free to call Larry or Kim. On behalf of the 1995 Convention Committee, the San Diego Shell Club, and the Conchologists of America, we thank you for your generosity and support, and we look forward to welcoming you to San Diego in June!

CONCHATENATIONS

by Gary Rosenberg

Pilsbry Award

The Malacology Department of the Academy of Natural Sciences of Philadelphia (ANSP) has decided to institute the Pilsbry Award to recognize exhibits at shell shows that present new knowledge about mollusks. The award is named for Henry A. Pilsbry, longtime curator of mollusks at the Academy, who named more than 5,000 species and genera of marine, land, freshwater, and fossil mollusks.

The Pilsbry Award is intended to encourage collectors to make their own original observations of and hypotheses about mollusks, to try to prove or disprove accepted wisdom, and, perhaps, to proceed on to publication. Because amateurs often have difficulty obtaining scientific literature, each winner of a Pilsbry Award can request up to 100 pages of free photocopies of molluscan literature of their choice from the Malacology Department at ANSP. Since the emphasis in the Pilsbry Award is on scientific merit, rather than beauty, scope, or educational value per se, an award-winning exhibit need not be a blue-ribbon winner in its class. Of course, some exhibits possess a multitude of merits, and a well-executed exhibit that wins the Pilsbry Award might also contend for a COA or DuPont Trophy.

The Pilsbry Award will first be available at the Philadelphia Shell Show in November 1995. Sue Hobbs and Phil Dietz of Cape May, New Jersey have graciously volunteered to design a trophy to accompany the award. Other shell shows interested in the Pilsbry Award should contact me; they must have a judge who has published at least three papers on mollusks in refereed scientific journals.

The sound of the ocean

Recently a child sent a letter to my department with the classic question, "Why can you hear the ocean in a seashell?" This caused some debate, with the following conclusions. You can hear the sound of the "ocean" not just with seashells, but also with a coffee cup or glass, or even by cupping your hand loosely over your ear. The usual explanation is that the seashell amplifies the sound of blood moving in your ear. Two pieces of evidence suggest that this is not correct. First, the sound is the same before and right after exercise (try running up and down stairs or doing jumping jacks), but it should be louder after you exercise since blood would be moving faster. Second, the sound is not drowned out by loud noise such as that heard next to a window-mounted air conditioner. A better explanation is that the shell (or glass) acts as a resonating chamber, bouncing surrounding sounds back and forth, jumbling and amplifying them. This means that you should be able to hear the "ocean" better in a noisy room than in a very quiet one.

New Literature

A Field Guide to Shells of the Florida Coast, Jean Andrews, 1994, Gulf Publishing Company, Houston, TX, 182 pp., 24 color pls. \$23.95, paper \$16.95.

If you don't have Jean Andrews' *Shells and Shores of Texas* (1977), which is out of print, consider this book, which illustrates and discusses most of the common shallow water mollusks of Florida. If you do have *Shells and Shores of Texas*, be aware that the Florida book is derived in large part from it, with additions for Florida species that don't occur in Texas. I noted one holdover: *Busycon coarctatum* is included, although its stated range doesn't include Florida. For informa-

tion, contact Gulf Publishing Company, P.O. Box 2608, Houston, TX 77252-2608; telephone 713-529-4301.

A Natural History of Shells, Geerat Vermeij, 1993, Princeton University Press, Princeton, NJ, 207 pp., 15 color pls. \$29.95.

The book jacket calls this a "celebration of shells," but it might also be called a "cerebration." Vermeij has thought hard about the structure and function of shells, and presents his theories, data, and conclusions clearly. Shell form can be affected by many factors, ranging from climate and predatory pressures to the cost (in terms of energy) of the materials from which the shell is constructed. If you have ever wondered why some shells have spines and others ribs, why some bivalves seal tightly but others gape, why some shells are nacreous, or high-spined, or have thick lips, this book can tell you. Call 800-777-4726 for ordering information.

Pearls: Ornament & Obsession, Kristin Joyce and Shelley Addison, 1993, Simon & Schuster, New York, 255 pp. \$65.

This lavishly illustrated book documents the history of the pearl as an object of desire and delight. The volume is beautifully designed, from pearly endpapers to reproductions of Renaissance masterpieces and photomicrographs of veligers. The chapter titles give a feeling for its scope: "By the Divine Dew," "Learn from Yon Oriental Shell," "Seeking Goodly Pearls," "A Most Sovereign Commodity," "The Gem Which Dims the Moon," "Oh Pale Poetic Pearl." The authors have woven a wonderful tapestry of the history, science and culture of the pearl.

Coloured Illustrations of Aquatic Mollusks in China, Wang Rucai, 1988, Zhejiang Publishing House of Science and Technology, Hangzhou, People's Republic of China, 255 pp. Price unknown.

Although this full-color book was published six years ago, I had not heard of it until I saw a copy in April, 1994. A computer search showed only three libraries in the United States that hold it. Coverage is primarily marine with some freshwater; six hundred and ninety-seven species are treated. Text is in Chinese, but captions and index are in Latin. If anyone has more information about this book or how to obtain it, please tell me and I will put it in a future column.

Mili Backus

August 21, 1912 — December 12, 1994

"Oh! How sweet it is!" This phrase was typical of the Mili Backus everyone loved, who was an amazing bundle of energy and loved life.

Mili brought friendliness, enthusiasm, kindness and warmth to the Southwest Florida Conchologist Society, and the Sanibel-Captiva Shell Club, the Sanibel Shell Fair, and Conchologists of America, as well as to many other volunteer organizations, through her writing. She was especially good at publicity, and she showed her concern for the islands and their cultural and environmental welfare. She probably never wasted a minute in her life.



Mili Backus
and friend

Mili loved shelling and fossiling, and will always be remembered by one friend, "sitting at the water's edge and letting the waves lap at her legs, uncovering the miniatures she loved."

Mili had a great many sayings, typical of her philosophy — such as "Live in the future. If you think positively, it is full of bright promises."

We will all miss her

—Vivienne Smith

Dorothy June Dawley

June Dawley passed away on October 23, 1994. She was 82. June left three sons John Peter, Randall, and Robert Chaplick, their wives, four grandchildren, several cousins, nieces, nephews, and grandnephews. She was an honorary life member of the Jacksonville Shell Club, whose membership, along with the conchological community at large, will miss her greatly.



June's interest in shells began somewhat innocently in the 1950's when, residing in New York City, she gathered stranded sea life from the Jersey shore to decorate a net wall-hanging in her sister's beach house. Visits to this, and later her own, retreat in Avalon continued long after the net was festooned to everyone's satisfaction, but her fascination kept the marine harvest a continual one. She became active in the Jersey Cape Shell Club, where she came under the influence of Harriet Hickman, a particularly avid and well-informed conchologist, and George Gundaker, proprietor of a fine and renowned shell shop on the Atlantic City Boardwalk.

In the 1960's and early 1970's, June was among a legion of spartan, if armchair, collectors who sorted the secreted booty provided by Florida dredgers like Jim Moore, Riley Black, and her St. Augustine neighbor, Ted Yocius. She left the company of the more casual conchologists when she put a microscope to use in the winnowing process. Thus she created the germ of a fine large and valuable collection of marine shells which, in deference to the *Zeitgeist*, we might call dimensionally-challenged.

Although June alleged her motive for leaving N.J. in favor of Jacksonville was like that which sent our founding fathers

across the Delaware two centuries earlier — confiscatory taxation — we'd like to think that the lure of Jacksonville and its conchological community were strategic. In a weak moment, June would admit to reading up on us in Tom Rice's *Of Sea & Shore Magazine* before packing her bag. All that aside, June was an abiding spirit from the day she attended her first meeting. Whilst respectfully aloof from the organization's political clamor, she worked to forward the club's educational mission — her fine exhibits, lectures, and an inspiring series of vignettes on fascinating marine creatures, like the Heart Urchin and "Texas Longhorn," appeared in the *Shell-O-Gram*. June made an indelible mark on members as well as many fortunate "outsiders" — most of whom never knew her except by name.

Perhaps her *magnum opus* was a scripted slide lecture on miniature marine mollusks which she not only created but administered via the mail to the majority of American shell clubs. This work was in a sense the culmination of those hundreds of hours spent poring over the dredged and drifted grunge in pursuit of the treasures many of us were privileged to share with our mentor.

June's favorite molluscan group was the marine gastropod family Caecidae, of which she had many hundreds of specimens in many dozen lots — virtually all hand-sorted under her tutored eye with the aid of a microscope. Along with those prizes, over 1,200 lots of carefully-curated shells, mostly from Florida's continental shelf, were transferred to the Florida Museum of Natural History two years before her passing.

A quotation of which June was particularly fond comes from Pliny the Elder: "Nature is to be found in her entirety nowhere more than in her smallest creature." June Dawley helped us confirm that wisdom. Now she, like the philosopher, belongs to the ages.

—Harry G. Lee



OUR COA CLUBS — A CLOSER LOOK

by Nancy Gilfillan

Astronaut Trail Shell Club

As usually happens, interest in shells and a search for other people with the same interest prompted, in 1966, an ad to be placed in the newspaper announcing a meeting for shell collectors and those wishing to learn more about shells. Thus, the first meeting of the Astronaut Trail Shell Club took place on March 20, 1966 at 1 p.m. at the Horse 'n' Buggy Shell Shop. Thirteen people attended that first meeting. Today, the club numbers about 100 members; their interests range from the serious scientific shell collector to the shell artist. The club usually has a monthly field trip and also will go on inexpensive trips to the Bahamas.

The club meets at the Melbourne Beach Community Center in Melbourne Beach, Florida on the fourth Wednesday of every month. It publishes a newsletter called *The Capsule* every month except in the summer (the May/June issues and the July/August issues are combined). The club does have club pins for sale; the club shell logo is *Cyrtopleura costata* Linné, 1758, the famed Angel Wing.

Members raise money by auctions, dues, bake sales, raffles, shell show, yard sales, flea markets, and donations. They use

this money to publish their newsletter, for shell show expenses, and to give at least one \$500 scholarship a year to a Florida undergraduate majoring in Marine Biology.

The Astronaut Trail Shell Club began a campaign to make *Pleuroploca gigantea* (Kiener, 1840), the Florida Horse Conch, the official state shell. The members contacted seventeen other clubs and enlisted their support. They also contacted and personally talked to Florida state legislators, and submitted a specific specimen to them. The club used posters to get the vote out, and State Representative Jim Pruitt introduced the bill to the legislature. Although the Queen Conch, *Strombus gigas* Linné, 1758 had originally been favored, the Florida Horse Conch today is the official State Shell of Florida.

The club hosted its first shell show in January, 1979. It met for two years to prepare for this. At this show the club presented the first COA award. There were 77 exhibits and the show was judged by Dr. R. Tucker Abbott, Selma Lawson, Jerome Bijur, and Cecelia Abbott. The club also presented the first "fashion show" of shellers from around the world (this idea was later borrowed by COA). The club caught a thief at the first shell show, taking dealers' shells and jewelry after winning a \$2 door prize. He was scooping up the shells and jewelry and putting them into a tote bag. Fortunately, the dealers apprehended him, the police were called, and all shells were recovered.

ON AN ISLAND FAR, FAR AWAY...

by Emilio García

... very close to the edge of the universe, lives an American lady named Joan Rutherford. If one looks at her island on the map, perhaps one can think of more remote places, but when one is there, it is a different story. Its name is Mili Atoll, located 80 nautical miles south of Majuro, in the Marshall Islands.

My acquaintance with Joan began when she asked for help on the identification of some local shells. After offering my services, I began to receive such fascinating letters from her ("I only get/send mail every 2-3 months, so reply may take 6 months," she said) that anyone with an ounce of adventurous spirit would drool, just reading them. How possibly could I have failed to reply immediately with an emphatic "yes!" when she invited me to visit her? Of course there are a few minor problems to overcome if one decides to go there, and Joan clearly points them out in one of her letters: If you arrive by air on Mili-Mili, the main village, you'll find that you are still 20 miles by boat from Lila-Mili, the island where Joan lives. People may not understand your English, even though you think they do. Transport is not always available; it can take days or never happen! Joan advises:

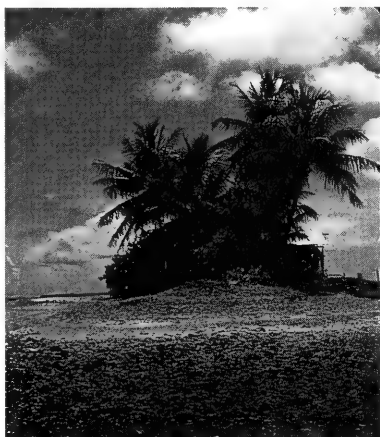
Have a Chutaro family member get Kazzi [pronounced "kah-chee"] Chutaro on the walkie-talkie for you to talk to about transport to Lila-Mili. Rely on no one but Kazzi; talk to him yourself; do what he says. You'll need to be there while the walkie-talkie call is made. Calls are made on the lagoon beaches at 8 am, 12 noon, 6 pm and 8 pm. Ask someone to get you when it is time so you can go to the beach with them for the call; follow them if they go with you.

None of the above fazed me. I was ready to go. Oh, one more thing: Lila-Mili is not a terribly big island. Actually it is 30' by 80' at high tide.

Joan discovered Mili Atoll over five years ago. She had just retired and someone mentioned that she should visit there. She tells me that when she saw the place she just knew it was where she wanted to be. She befriended a Marshallese family who invited her to stay and offered to build her a house on any of the islands owned by the "family" in the Atoll. For five months Joan slept in a tiny tent and cooked over open fires while making up her mind EXACTLY where she wanted the house built. It was a surprise to everyone when she chose Lila-Mili, and although they tried to change her mind, she did not

waver. And I was surprised too, until I stayed there. It happened last summer, and I simply HAD to tell about it.

We arrived in Hawaii under threat of a hurricane. We were to take Air Marshall Islands that same day, but they had cancelled the flight "for repairs," and we had to stay overnight for our Continental Micronesia flight early next morning, hoping the storm would let us fly. It did and we left. Six and a half hours



Lila islet at low tide

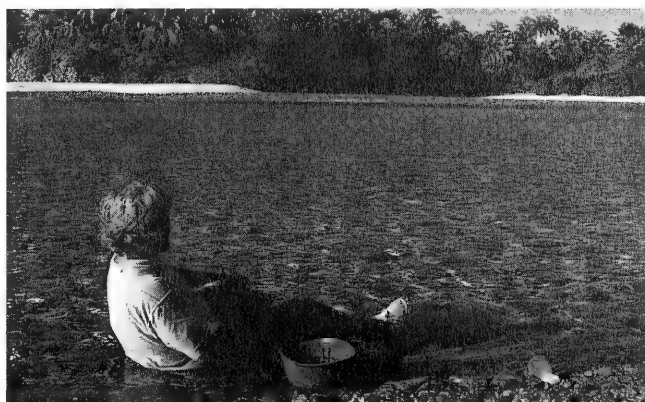


Air view of Ajelleran (left), Lerbep (center) and Bué islets in the northeastern corner of Mili Atoll, showing blue hole and tiny Lila islet.

later we were in Majuro, greeting Joan and Bernice, the curator of the Alele Museum, who were waiting for us at the airport. We went directly to the Alele Museum.

Sometime back, Joan had decided that, as a way of thanking the Marshallese for welcoming her with open arms and giving her five years of happiness, she would build a marine exhibit, mostly of the seashells of the Marshall Islands, to be placed in the Alele Museum in Majuro. She had spent the two weeks prior to my arrival getting the exhibit ready, no easy task, as anyone can attest who has lived in far-off places where almost everything is difficult to obtain. But there it was, cabinets and all, with many species of shells, from limpets to turrids to bivalves, representing some 80 families.

Arrangements were to take the copra boat out to Mili as soon as we arrived in Majuro, but we missed the boat because of the cancellation of our original flight. While waiting for the next flight to Mili, we stayed in a house that belonged to a friend of Joan's, sleeping at night on the balcony where it was cooler. Two days later we finally departed in a propeller plane

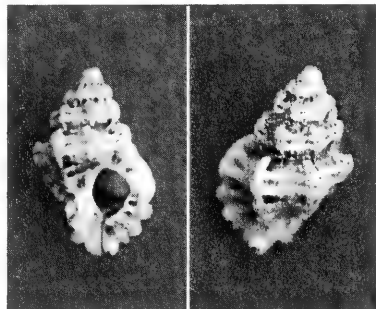


Joan cleaning *Strombus luhuanus* for dinner that night.

and, after a 20-minute flight, we saw the ring of islands appear in the distance.

Among the coconut palms of the larger island, where the small village of Mili-Mili is located, we could also see a straight line that looked like a narrow path. It was the air strip.

When we landed we took our luggage to the beautiful beach that is on the lagoon side of Mili-Mili, climbed on a small boat, and went to the copra boat that we should have boarded in Majuro. And so we began our journey to Lila-Mili which, according to Joan, could take from three hours to three days. Fortunately, it took us three enjoyable hours, as we viewed each passing island after beautiful island from the vantage point of the roof of the boat. As we travelled east in the late afternoon, the sun shed a perfect light on the myriad coconut palms, the white sandy beaches, the incredibly blue water and, finally, on Lila and its surrounding islets.



Favartia sykesi Melvill, 1888

Mili is the most dramatic atoll I have ever visited. Although it has the basic lagoon, 30 miles across, the islets of the "ring" are not always aligned, but form small clusters now and then, mini-archipelagos, with passes out to the open ocean on either side of them. Such is the topography of Lila and its surrounding islets, Ajelleran, Lerbep, and Bué. To make the area still more interesting, Ajelleran has a four- to five-foot deep salt lake in the middle, and Bué has a "blue hole" about one square block and some 30 feet deep, cut out in the middle of the reef and reaching the islet's southwestern shore. There is a man-made shallow canal that leads from the lagoon depths into the "blue hole," and our copra boat used it that afternoon to enter and anchor. We were home.

Lila looks from the distance like a tuft of hair sticking out of the water — exactly five coconut trees, and an abundance of a bush that produces blooms with the fragrance of the plumeria or frangipani. Beneath, lining the shady path, are Boston ferns and Bird's Nest Ferns, both native to the Atoll. There is a "sleephouse," a small structure of woven pandanus leaves, raised above the floor of the islets. It has two narrow, but utterly comfortable beds made of wooden platforms topped with thick foam-rubber pads. One of the beds has a halogen lamp, charged by a large battery, to read by. I had a window one inch from the edge of my bed, and fragrant blooms just outside. The nights were cool and, because of the isolation, there were no mosquitos (smart Joan!!). There is no generator and there are only natural sounds in Lila-Mili. I slept like a baby.

Immediately next to the "sleephouse" is the bathroom, a small pandanus-leaf structure with a toilet set on cement over a septic tank. There are always two buckets of salt water inside the structure, and a very large drum containing salt water just outside to replenish the buckets. It works to perfection. A similar structure stands behind the sleephouse for bathing. Joan has a nine-hundred gallon tank to collect rain water (no problem!), connected to the bathhouse by a hose. If you prefer hot water, she has special water bags to placed in the sun in the morning: when you are ready to shower, you can hang one of them from a nail in the bathhouse, pull a showerhead tube attached to the bag, and take your hot shower. Most of the time I had to add cold water to the bag because it was too hot! As you shower, you can look at the beauty of the surrounding islets and perhaps a breathtaking sunset or starry night!

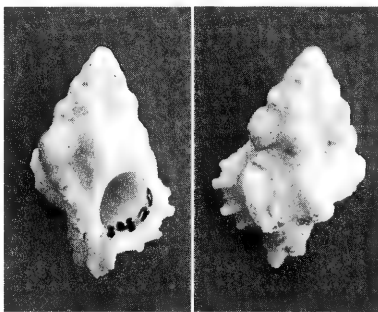
Finally there is the "cookhouse" which is, of course, the kitchen, with a wall of shelves filled with an unimaginable variety of canned and dried food, and spices I never heard of. There is also a kerosene stove — Joan can make it do anything.

Even I, at her urging, tried my luck at a Cuban chicken fricassee (with canned chicken, of course), and it worked! Among other culinary extravaganzas were a dinner of *Strombus luhuanus*, a breakfast and dinner for three with the meat of one small *Tridacna gigas*, and a lobster dinner with lobsters caught by *Homo sapiens* running all over the outer reef on a moonless night. This was one of many extraordinary experiences on Mili Atoll because, when the flashlights were off, all one could see were the stars in the sky, and all one could hear was the pounding of the waves on the reef. It did feel like the edge of the universe.

Part of the "cookhouse" is a small side room with a beautiful, huge desk, facing windows on two sides of it — Joan's "study." The view is magnificent. The desk was our dining table when it rained. If the weather was nice, which was most of the time, we dined outdoors under the coconut trees, at an old wooden spool with two broken, rusty metal chairs and an old fallen tree trunk. One morning Joan took me by the hand to show me her new chair: another tree trunk had floated in with the new tide. However, we would have to wait for higher tides to bring the "chair" to the "table." Many an evening we

spent around that table, talking from shells to politics, at times rushing to catch an extraordinary sunset or to consult a book of the heavens to know the name of a constellation we had never seen before.

At low tide one can walk from Lila to Ajelleran and Lerbep. The rest of Lila is then surrounded by about three feet of water, and



Attiliosa caledonica Jousseaume, 1881.

snorkeling in the area is like being immersed in a spectacular aquarium with heads of beautiful blue coral, fantastic fish, nudibranchs and two- to three-foot *Tridacna gigas*. This lagoon-within-the-lagoon abounds with the more common cones and augers, which at night crawl on the beach. For some reason, however, olives and miters are almost absent there. Among the more interesting specimens collected at Lila were white-mouth and golden-mouth *Strombus luhuanus*! A huge old *Charonia tritonis*, Joan's pet, lives near the "blue hole."

The outer reef of Ajelleran, Lerbep and Bué is totally exposed at low tide. Few species of live shells were there, with the exception of *Vasum turbinellum*, *Thais armigera* and *Mitra cucumerina*, which were everywhere. If one collected at the high tide mark, however, one could find very nice beach specimens of *Conus auricomus*, *C. auratinus*, *C. floccatus*, *C. pertusus*, etc. It would take SCUBA to collect them live.

The best collecting area for live specimens was on the west side of Ajelleran islet, by Achran Pass. The name of the pass is a Japanese corruption of the name Ajelleran. It appears on the only maps of Mili Atoll made by the Japanese during World War II. (One can still see, around the main islands of Mili-Mili many untouched relics of the war: hangars, planes with loose propellers, cannons, and even the big unfilled holes left by bombs when the Americans attacked the atoll. These huge holes accumulate rainwater, so the clever Marshallese use them to plant taro, a staple food that needs moist conditions to grow.) Achran Pass is one more reminder of that era. And near it we found a number of species of cones, cowries and miters. Most interesting of all were the live *Haliotis jacnensis* Reeve I found in only three feet of water, under rocks, in very heavy



The author holding a "baby" *Tridacna gigas*, the largest he could lift.



Joan Rutherford's "study," which is part of the cookhouse.

Add to your mental picture of this paradise the snowy-white, fragile-looking, unafraid Fairy Terns, looking at you with their huge black eyes, posed or flying among the trees and singing their melodious harp-like songs. And the smell of unaltered, decomposing vegetation. A primeval world. If you look down, particularly closer to the edge of the jungle, you'll see hundreds of hermit crabs.

About 40% of the crabs inhabited different-sized shells of *Turbo argyrostomus*, but the other 60% occupied different species: *Bursa*, *Cymatium*, *Cymatium*, *Colubraria*, the larger species of *Nassarius* etc. To attract the crabs to a single location I used cans of cat food I had brought to bait traps. After an hour or so I would return and pick and choose from the lot. I could find these crabs at any time, day or night.

The hermit crabs of Ajelleran inhabited a rather sandy beach on the lagoon side. The beach has quite a number of small rocks; and it is on top of these rocks, in the early-evening low tides, that one can find them. Although some crabs did inhabit the very young *Turbo argyrostomus*, the great majority occupied shells of small to micro species such as *Dentarene*,

Lienardia, *Daphnella*, etc. Every early evening at low tide, I went to that area to see what was available — besides the above, mostly unidentified material. I obtained a number of fine specimens of the interesting *Phrygimurex sculptilis* (Reeve), and the rare *Favartia sykesi* Melville).

The two weeks in Lila passed all too quickly. Departure day dawned rainy and windy but, never fear, Joan had everything we needed to protect ourselves against the rain, thunder, and lightning. We crossed back over the lagoon in a much smaller boat, making a stop on Tegewa, the large islet where Joan's adopted extended family of charming Marshallese live. It is a beautiful wooded islet with flowering bushes, and the "family" has built there a small pandanus hut to rent to those

with an adventurous soul. Half of the hut is a raised wooden platform with a double-bed mattress, and the other half has a small table and chairs. The toilet and shower are outside, in a different building. They rent the hut at \$150 per week for one, or \$225 for two, basic island food included. One may also rent boats from them to collect in other islets of the atoll.

Although Joan's house will probably be available for rent this spring, she does not allow collecting live shells in the Ajelleran-Lerbep-Bué area. You may, however, hire Kacchi, a knowledgeable and friendly Marshallese and a member of Joan's extended family, to take you to other areas. Should you feel the spark and want to go there, I suggest you contact Veronica Wase, Marshall Islands Travel Agency, P.O. Box 1156, Majuro, Marshall Islands 96960. She can make your air and land arrangements to make sure someone will be waiting for you at Mili-Mili.



Sleephouse

surf. They preferred eroded coral rocks, somewhat roundish underneath, presumably so they could move with greater ease. *H. jacnensis* was thought to be exclusively a deep-water species.

I had the most fun collecting crabbed specimens. Both Lerbep and Ajelleran have a large population of hermit crabs quite different from each other. Lerbep is an untouched little paradise with an almost impenetrable jungle of coconut palms. Once you go in, the totally shaded interior is filled with ferns. Almost every rotting coconut had a Bird's Nest fern growing on it, and they were also on the trunks of the coconut palms, together with cascades of Boston ferns. Not until Joan told me, did I learn they are called Boston fern because the Boston missionaries brought them to the States from the South Pacific.

Astronaut Trail Shell Club

continued from page 23

The club, however, was not daunted by this first experience; they continued with their shell shows (always the third weekend in January), and this past January presented their 15th shell show with the same shell show chairman — a feat that must be a world record! Club members not only support and participate in their own shell shows, but are very active in other shell shows as well. In addition, the Brevard Museum has supported the club faithfully by donating a trophy for the best junior exhibit for each shell show.

Club dues are \$10.00 for an individual and \$12.50 for a family. If you should be in the Melbourne Beach area and would like to attend a meeting, contact Jim Cordy at 385 Needle Boulevard, Merritt Island, Florida 32953; the Astronaut Trail Shell Club would be most happy to welcome you.

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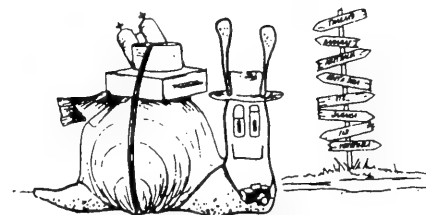
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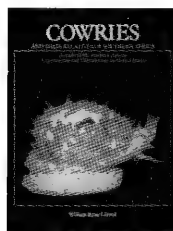
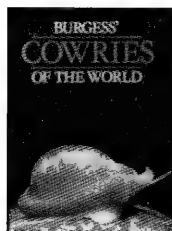


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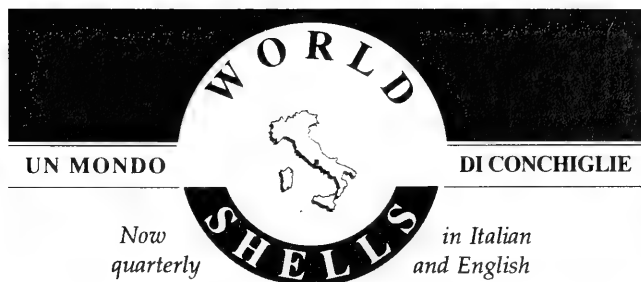
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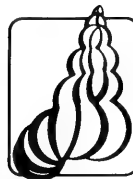


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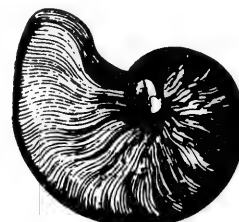


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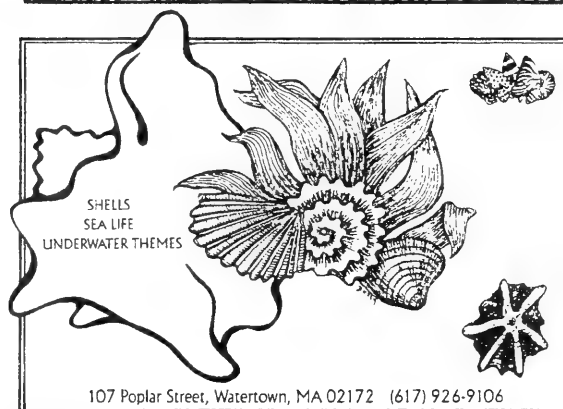
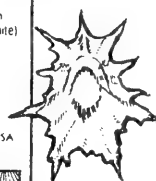
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SOMETHING FOR EVERYONE

by Emilio García

In an exciting trip to Madagascar this past summer I was able to obtain and photograph live specimens of the beautiful volute, *Lyria delessertiana* Petit, 1842 and the rare terrestrial snail *Clavator eximius* Shuttleworth, 1852.

Although it is not a rare species, I have never seen a photograph of a live *L. delessertiana*, so I thought it might be of interest to the readers of

American Conchologist to see the very beautiful animal. This specimen was collected in Djamanjary, Nosy Bé, northwest Madagascar, at low tide in a few inches of water. It was at the edge of a sand pocket surrounded by grass.

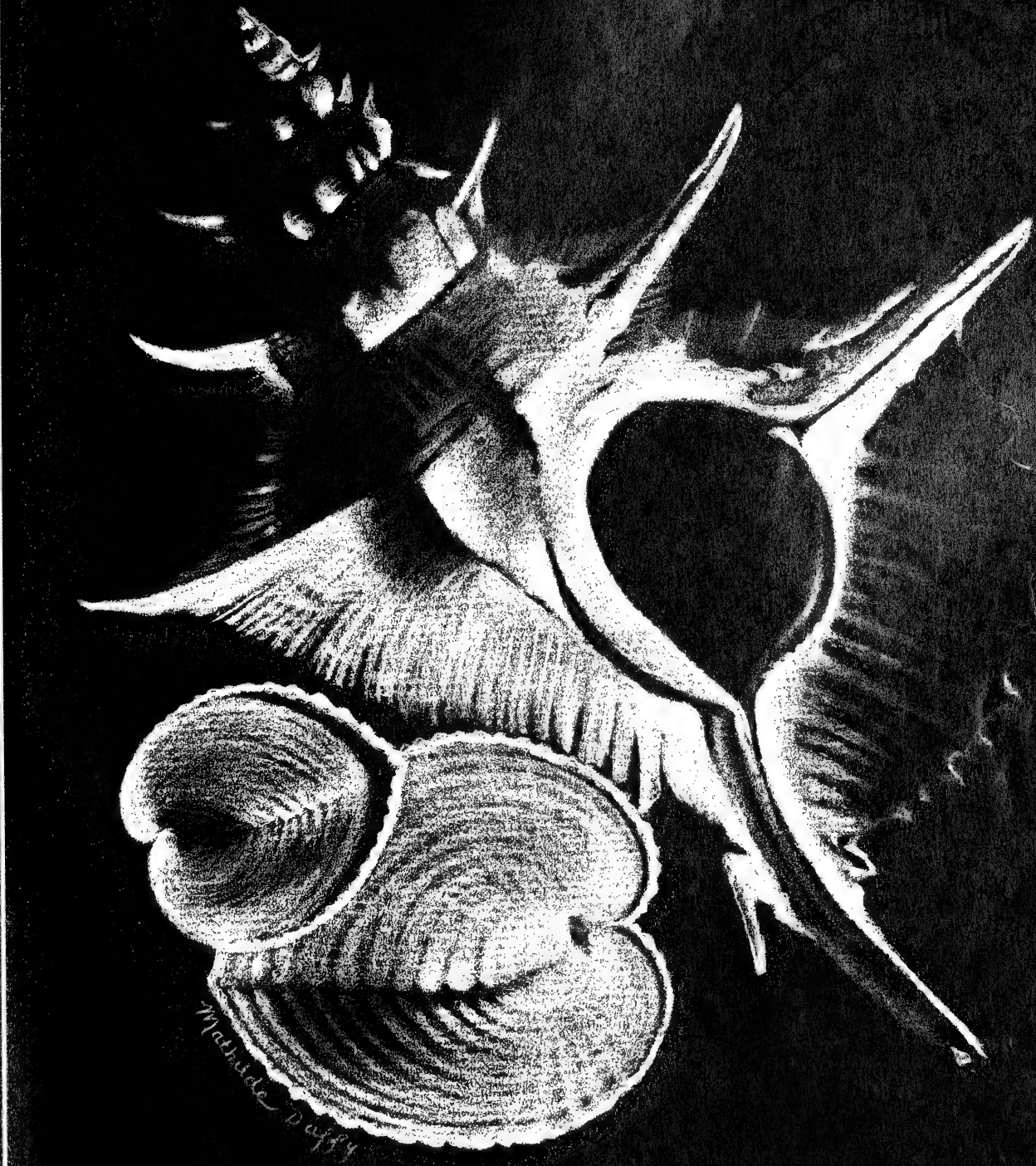
The specimen of *C. eximius* was crawling on the floor of a rainforest near Mandraka, in east-central Madagascar.



Lyria delessertiana



Clavator eximius



AMERICAN CONCHOLOGIST

QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 23, NO. 2

JUNE 1995



In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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MEMBERSHIP: Memberships are for the calendar year, January through December. Late memberships shall be retroactive to January. **DUES:** (per year) INDIVIDUAL (USA, Canada, Mexico) \$12.50; FAMILY & CLUB/ORGANIZATION (USA, Canada, Mexico) \$15.00; CARIBBEAN, SOUTH & CENTRAL AMERICA (via Airmail) \$20.00; COUNTRIES OUTSIDE THE AMERICAS (via Airmail) \$25.00. Make checks payable to CONCHOLOGISTS OF AMERICA. Please pay in U.S. dollars or with a check that has Transit Enrouting and Account Numbers printed at the bottom of the check, or with a money order; send to Bobbie Houchin. **RENEWALS** are sent to the TREASURER, Walter Sage. **BACK ISSUES** are available from PROPERTIES DIRECTOR, Hank Foglino, 4 Trent Court, Smithtown, NY 11787-1266. Prior to 1985 — \$1.50 each; 1985 to current — \$3.00 each.

COVER: Mathilde Duffy (107 Poplar Street, Watertown, MA 02172) is our cover artist. In this, her sixth, cover for *The COA Bulletin/American Conchologist*, she explores the structure of shells using light and shadow. Two of the most elegant shapes in shellform are her subjects: a pair of Heart Cockles, *Corculum cardissa*, and the Alabaster Murex, *Chicoreus (Spiratus) alabaster*. The original was done in colored pencil (whites) on black paper. A longtime COA member, Mathilde is also generous with her talent within the pages of *American Conchologist*, contributing her drawings for many of our regular sections. She also contributes original works to the COA Annual Auction, and those who attend the San Diego convention will have an opportunity to view some of her work at the Bourse.

PRESIDENT'S MESSAGE

Well, the 1995 COA Convention in San Diego, California is just around the corner. I am looking forward to visiting San Diego this time even more than for their last convention. I know that everyone in the San Diego Shell Club has been working very hard to make this convention a great success. Some people have been having trouble getting rooms at the hotel for the nights before and after the convention. Unfortunately, several other conventions are being held in San Diego at the same time that we will be there. (They obviously discovered the secret of visiting the city before the "season" begins on July 1.) By the time you read this the convention may have already begun. If it has, and you are reading this, you are missing a good time.

Your Board of Directors has been busy this year. There will probably be more changes to the Constitution and Bylaws. There will be some changes in our directors also. Several people have asked to be replaced since they have been on the board for many years. If you were interested in becoming more involved in the leadership of COA, you should have let me know. I had to wrack my brain and those of several other people to fill these vacancies. There will also be some changes in duties for some of the other Board members. I'll tell you about these after I have sprung them on the Board.

Let me know about any ideas you have for improving COA. I hope to see many of you at the convention.

LINDA

CONSTITUTION AND BY-LAWS CHANGE

In the March issue of *American Conchologist* we sent the membership the Board-of-Directors-recommended changes to the By-laws and Constitution. The response was not very good, but the overwhelming response of those answering favored the recommended changes. There were two (2) outright disapprovals, and one was divided between approving the abolishment of Parliamentary as a voting member of the board, but not approving of the elimination of one of the Trustees.

As a result of this vote you should make the following change to your copy of the CONSTITUTION, Article VII, Para. A and C:

Para. A. The elected officers are President, Vice-President, Secretary, Treasurer, and Trustee.

Para. C. Eliminate: 9. Parliamentarian and change 10 to 9.

Change CHAPTER 4 of the BY-LAWS:

Sec. A. The term of office for all positions is one (1) year.

Eliminate Sec. B. and change Sec. C., D., and E. to read Sec. B., C., and D.

This is a preliminary report to make sure this information will be in the June issue of *American Conchologist*. The final report will be given at San Diego in June with the actual number of votes for and against. Members who made comments and recommendations on their ballots will have these comments presented to the Board of Directors at the Convention. If those members will contact me afterwards, I will be happy to give them the decision of the Board.

John A. Baker, COA Parliamentarian

147 Hedgegrove Avenue

Satellite Beach, FL 32937-2113

OYSTER AQUACULTURE ON CAT ISLAND

by J. M. Inchaustegui

Recently I visited an aquaculture venture on the south shore of Cat Island in the Mississippi Sound in the Gulf of Mexico. Cat Island is only 7 miles off the Mississippi coast directly across from my beachfront home in Long Beach, MS, so it is only a short boat ride for me. On this secluded island, one of the barrier islands which protect the Mississippi Sound from the full force of hurricanes, there are many pine trees but no cats. The Spanish explorers looking for the mouth of the Mississippi saw many raccoons on the island beaches and took them for cats, so they called this "Isla de los Gatos."

Oysters, *Crassostrea virginica* (Gmelin, 1791), are being cultivated starting from the veligers all the way to fully mature ones ready for shipment. At present over 4 million new cultured oysters are thriving there in the productive waters of South Bayou. This operation uses existing and innovative aquaculture techniques designed to help meet growing public demand for oysters without increasing pressures on Mississippi's natural oyster reefs, already harvested to their maximum yield. By spawning their own oysters, they are able to provide additional sources without relying on already-diminishing wild stocks, a basic rule of this plan.

While new to the Gulf of Mexico, oyster culturing is not a new idea — in fact, it may be the oldest form of aquaculture. It is well documented that the Romans and the Chinese cultivated them as far back as 3,000 years ago. Nor is oyster farming new to the modern world. Over 40% of the oysters marketed each year in the United States are the results of aquaculture operations. Most oysters produced on the west coast are farm grown; Washington state leads the nation with more than 9,000,000 pounds cultured in some 365 farms. In Europe, France cultures over 300,000 pounds for the half-shell trade to be eaten raw because it is considered less civilized to cook oysters.

Oysters can survive in a wide range of water conditions. While thriving in moderate to high salinity, they can tolerate short periods of totally fresh water. This enables them to contend with periods of drought or heavy rain. They also can survive short periods of subfreezing, and can live out of water for several weeks when kept cool.

The aquaculture operation starts by inducing male oysters to begin the reproduction process in circulated water by raising its temperature about 10 degrees. As they release their sperm through the water, it is circulated over the female oysters which filter the sperm out of the water. The females, detecting the presence of sperm by taste, immediately release their eggs and the operators agitate and mix the result until they obtain about 99.9% fertilization, much higher than could be obtained in nature.

There is a very peculiar story about the sex life of oysters, but I'll tell you more about that later.

Fertilized eggs are transferred to special tanks where they are allowed to hatch into swimming veligers, and after 10 to 12 days they are induced to settle and attach to oyster shell grit ground to a few microns in size. Once the veligers attach themselves to this small bit of oyster grit, they can no longer move or "clump" themselves as they do naturally, but remain one separate oyster per unit through the entire maturing process and for the rest of their lives. These are called "clutchless" oysters because they don't attach themselves into clumps. Thus they don't have to be separated before use in the half-shell oyster bars and demand a higher price than the natural reef-grown variety.



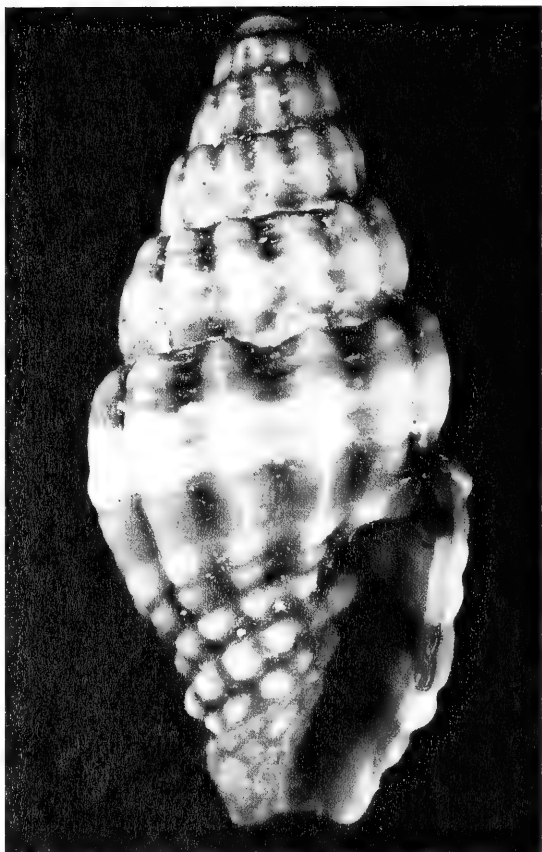
The racks at low tide. At high tide all the sacks are covered by water.

After a few days these microscopic spats are filtered through very fine screen to eliminate oyster grit that has no oyster attached, and any spats that have died. By continually filtering through graduated meshes workers select the fastest growing oysters and eliminate slow growers.

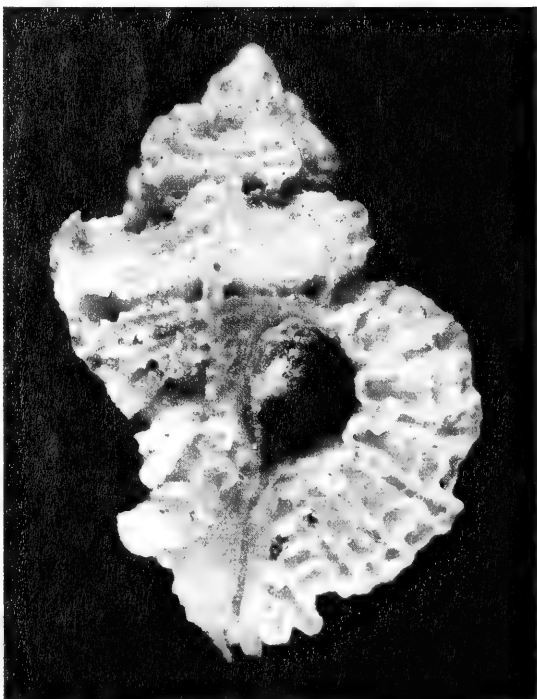
All the while these tiny oysters are being fed the rich Gulf waters by force pumping. Feeding on microscopic algae and other plankton, and without natural predators, they grow rapidly. At a predetermined size they are put into plastic mesh sacks and placed in 3 to 4 feet of water on intertidal grow-out racks that suspend the sacks above the bottom. Thus raised, they pick up no mud and sediments that would normally impart a disagreeable taste; and the polyethylene sacks eliminate predation by oyster drills such as *Thais haemostoma* (Gray, 1839) and the black drumfish (they have jaws strong enough to crack oyster shells). Another advantage of raised sacks is that there is no die-off from smothering silt — as little as a fraction of an inch of silt would smother thousands of spats in a natural reef.

As these small oysters grow, workers monitor them; they periodically rinse and grade them into other sacks holding fewer oysters to allow growth room. By selecting the fastest growing oysters they are establishing a gene pool that will develop into a race of fast-growing, good-tasting oysters. Also, elevated uncrowded sacks allow easier feeding and faster growth. They reach harvest size in about 12 months, instead of the usual 18 months or more in nature. This rack and sack method is also being used in Florida, Washington, California, British Columbia, France and other areas, but while the technique is not new, some of the specific methods used on Cat Island are certainly new, and are considered trade secrets. This industry could produce more than 50 million oysters per year, great-tasting ones, and completely safe, even raw on the half shell.

To get back to the sex life of an oyster, the entire process was explained to me by my good friend, Dr. A.B. Osborn of Elizabeth, LA while we were taking a breather from our shell-collecting in the Fiji Islands a few years ago: "People think that oysters don't have an exciting sex life but they are wrong. Oysters are hermaphroditic, with both male and female reproductive organs. Young oysters are primarily male, and as they mature they become primarily female. They can also change back into males as soon as the female eggs are discharged into the water. If you place some female oysters in an aquarium without males, they soon detect this imbalance and some change to males so that the reproductive process can go on. So oysters have the best of both worlds!"



Vexillum species. Under 10mm. Bohol Straits, Philippine Islands.



Favartia rosamiae (D'Attilio & Myers, 1985). Under 10mm. Bohol Straits, Philippine Islands.

Photos by Dr. Tom Watters, Aquatic Ecology Lab, The Ohio State University, 1214 Kinnear Road, Columbus, Ohio 43212.

SQUID STUDY

by J. M. Inchaustegui

The U.S. Navy is doing research on squids (molluscs that, together with cuttlefish and octopus, are classed as cephalopods) at the Coastal Systems Station which is a Navy research facility that specializes in mine countermeasures, amphibious warfare, naval special warfare, diving and salvage, as well as other classified experiments.

Squids feed at night and dart around at the first hint of light. These nocturnal molluscs are very shy in artificial light, so in order to study them in their normal behavior patterns in the dark, the Coastal Systems Station has developed a low-cost infrared underwater camera system that is used by the University of Texas National Resource Center for Cephalopods for biomedical research and other scientific uses. The NRCC needed to find a way to study undisturbed squid at night to observe and record their feeding, mating, and response to predators. Through the Coastal Systems Station they found that their investigation was well-suited to a night vision system under development at CSS.

This night vision system consists of an infrared light source, mounted at an angle to a 35 mm camera housed in a watertight case. A 75 mm lens provides a wide range of magnification. The best thing is that all components are readily available off the shelf so that the cost of the system is very affordable.

Some field experiments have been conducted by the scientists of NRCC using this camera with the infrared light. They proved that squids will not become alarmed when this light is used, so now the feeding, mating, and predator avoidance can be studied undisturbed by visible lights which would alter the way these molluscs behave. They are preparing to do further experiments in April and plan to have a complete report on their study in the near future.

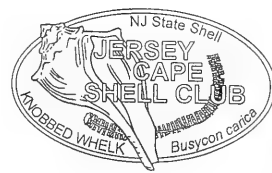
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AMU HAWAIIAN STYLE: HELLO HILO!

Co-sponsored by the Department of Biology, University of Hawai'i at Hilo, AMU 1995 will be held at the University of Hawai'i, at Hilo. AMU Hawaiian Style will feature a Keynote Address by Bill Mull of Volcano, Hawai'i, the noted photographer of Hawai'iian wildlife. Guest of Honor will be Jacqueline DeRoy of the Galapagos. There will be a symposium on Island Biogeography chaired by Gustav Paulay of the University of Guam. Field trips "will take you into the wonder world of Hawai'i's animals and plants"; try these: Kapoho Tide Pools, Silverswords and Succinids, Hawai'i Volcanoes National Park, Rainforest Slopes of Kilauea Volcano, and Lava Tubes! But, stop! Cancel that call to your travel agent! Sorry, you're too late. It's history. AMU 1995 will have come and gone between the mailing of this magazine and your reading these words. And it will have come and gone in Hawai'i!

PIN MONEY

The Philadelphia Shell Club and the Jersey Cape Shell Club will have new pins for sale at the San Diego Convention. We have no details on price or ordering, but Sue Hobbs tells us that the Philadelphia pin is 1" in diameter — a tan shell on an aqua background with a yellow rim. The Jersey Cape pin is 1 1/2" long; its shell is grey and orange, the background is blue and the rim is orange. We have no details, but we have received drawings of the two new club pins.



Is *Natica paucimaculata* Sowerby, 1914 a valid species, or just a synonym of *N. onca* (Röding, 1798)?

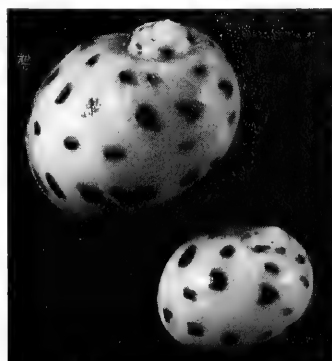
by Gene Everson

In June, 1993 I collected a 13mm *Natica* in the Solomon Islands' Florida Group which matched perfectly with *Natica paucimaculata* Sowerby, 1914 as illustrated in Kaicher's Naticidae II card pack. Since *N. paucimaculata* is listed as endemic to New Caledonia, I wanted to confirm the identification and extend the known range slightly northward to the Solomons.

I sent my specimen to Dr. Michael Hollmann, an authority on the Naticidae, who identified my shell as *Natica onca* (Röding, 1798). He stated that "the reason for this assessment is that I cannot find any feature that would allow me to separate it from *N. onca*. In my collection I have a number of specimens (18) from various places in the Solomons (Honiara area; Yandina, Mbanika Island, Russel Group, Savo Island, Kakambona, Guadalcanal) some of which look exactly like your specimen, in terms of shell shape and coloration as well as opercular sculpture. What I see among my specimens is a very pronounced variability in the color pattern, with all kinds of intergrades towards 'typical' *N. onca*; i.e. specimens with 5 horizontal rows of densely spaced dark brown dots. On the other extreme I have specimens with only 2 rows of very few, widely spaced large dots. Dot size also varies, and in some cases dots even merge vertically with the dots from preceding and/or subsequent rows so as to form what superficially look like vertical stripes."

There seem to be serious doubts about the validity of *Natica paucimaculata*. All the features mentioned in the original description can be found in certain populations of *N. onca*, as mentioned above. The species was described from an empty shell, so the operculum is not known. R.M. Dixon in his 1977 **Provisional Catalogue of Recent Species of the Naticidae** lists *N. paucimaculata* Sowerby as "*?Tectonatica*," indicating that he speculated it might belong to that genus rather than to *Naticarius*. As Dr. Hollman points out, if it was indeed a *Tectonatica* (as the closed umbilicus might suggest but does not necessarily prove), then it should have an operculum with no, or with only one or two, marginal ridges, very different from the multisulcate typical *Naticarius* operculum which is characteristic of *N. onca*. Should *paucimaculata* Sowerby turn out to be a *Tectonatica* it would certainly be a valid taxon. However, it will be necessary to examine live-taken specimens from the type locality (New Caledonia) to see their opercular sculpture and to settle this question. Shell form and color pattern alone clearly do not allow separation from *N. onca*.

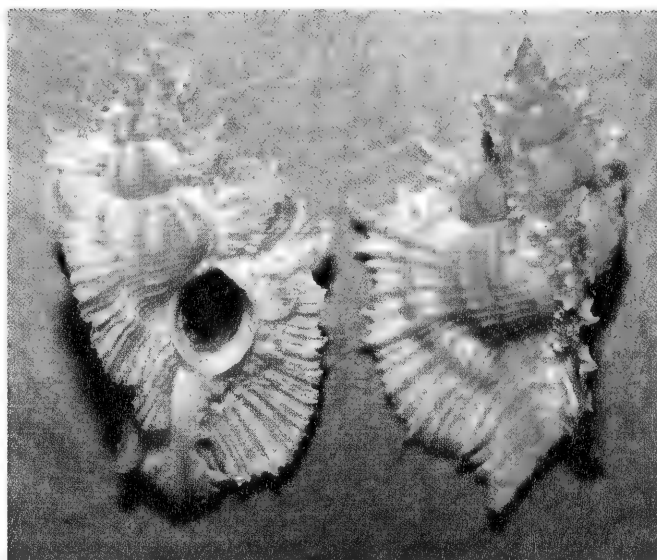
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a) *Natica onca* from the Celebes Sea, Sipadan Island, Borneo.

b) *Natica onca* from the Florida Group, Solomon Islands.

EXCITING NEWS!!!



PTERYNOTUS BRIANBAILEYI IN AUSTRALIAN WATERS!!!

by Keith and Glenda Rowse

Several months ago we were fortunate to obtain from a trawler, who had been operating in deep water north of Townsville, several specimens of a murex which, when cleaned, was found to be in the genus *Pterynotus*. These shells appeared to differ from other known species such as *Pterynotus loebbeckei* (Kobelt, 1879), and *P. miyokoe* (Kosuge, 1979), and although the dead specimen we obtained looked exactly the same as the specimen shown in Volume 2 of Wilson's **Australian Marine Shells** as *P. loebbeckei*, the live taken shells showed definite differences.

The only other *Pterynotus* of any similarity we could locate was [in] an article by Heinrich Mulhausser in the magazine **La Conchiglia** in May/June 1985, which showed photos of three specimens of *Pterynotus brianbaileyi* which had been dredged off Russell Island in the Solomons Group; and although the largest specimen shown in this article was not in good condition, we felt that in comparison this was the closest we had come to identification. As a specimen of *P. brianbaileyi* (Mulhausser, 1984) was not available to us for comparison, we decided to write to murex expert Roland Houart in Belgium, enclosing photos and requesting his valued opinion. We have now received a reply from Mr. Houart in which he confirms that these beautiful *Pterynotus* specimens are indeed *P. brianbaileyi*. Let us hope that more specimens of this exciting, elusive species will become available to us once again in the future.

Addendum: Since writing the above, we have received a further confirmation of this identification from Dr. Emily Vokes, murex expert, Tulane University, New Orleans, U.S.A. (I sent a photo of the shell to an exchange friend in Kentucky, who sent it on to Emily for I.D.)

19 Farrell Street, Kirwan 4817, Townsville, Queensland, Australia. This was first published in the Townsville Shell Club Newsletter, **Tide Watch**, in February 1995.

BOOK REVIEWS

Peterson Field Guide (to) Shells of the Atlantic and Gulf Coasts and the West Indies, fourth edition, by R.T. Abbott and P.A. Morris. Houghton Mifflin, New York. pp.350 + xxxiii. 74 color plates, 115 line drawings. \$16.95 paper, \$26.95 cloth. (Jan. 18)

It was in March, 1947, according to his grandmother's inscription, that the reviewer was given his first book on mollusks, Percy Morris' *Field Guide to the Shells*. Under Roger Tory Peterson's editorship, this was the first work from the pen of a colleague, not the editor himself, and the third in a series of what is now 49 titles which have passed the great innovator's blue pencil. The number "3" refers to this priority, and shellers should take pride when they see this number on the caudal aspect of each book's spine. Our mollusks were the first non-avian biota to be featured in this splendid series. It is not known when the concept of "field guide" entered our collective lexicon, but master craftsman Peterson has made it a powerful and pleasurable phrase in the households of naturalists.

The reviewer has obtained each subsequent edition (second, 1951; third, 1973) in a timely fashion. Each augmented the scope and quality of the work, in geometric increments — improvements in taxonomy and nomenclature, adding and winnowing appropriate/inappropriate taxa, ever more extensive use of color, and more readable format.

Morris produced the second edition. The third was completed posthumously with the obvious influence of its "technical editor," the late Bill Clench. The present edition, aptly enough, is brought to us by Dr. Clench's protégé, Dr. R. Tucker Abbott.

This fourth edition differs dramatically from its predecessors. All photographic plates, not just a few appetizers, are in color — good to superior quality in this copy. Each plate is an assembly of newly-mustered specimens, in close to perfect phylogenetic juxtaposition. Of particular value are dozens of live animal shots — the most spectacular may be of *Dentalium eboreum*. Yet it is the shots of shell-less (or nearly so) gastropods such as Seaslugs, Seahares, and Nudibranchs that most empower the illustrations. The collaboration of many, mainly amateur, malacologists (most COA members) appears to have been pivotal in this facet of the work — and is acknowledged by the senior author. Abbott's innovative use of text figures (mostly familiar and lifted from earlier works by him and others) is a valuable adjunct to the written descriptions of many of the over 800 species treated. The incorporation of many, not all new and recently published taxonomic and nomenclatorial perspectives help put this work on an equal footing with the larger, standard modern works dealing with regional faunas. A certain sign of the times is the first appearance, in this series, of an admonition against over-collecting.

Glitches do, however, both persist and creep in. The first one is among the Library of Congress minutiae — Percy Morris is credited "1899 - ." Yet we are soon reminded in the following pages that he died over twenty years ago. Is this a subtle Freudian machination suggesting the junior author's (admitted well-earned) immortality?

A particular tenacious myth, which has survived all revisions, is the statement that raccoons feed on *Dendostrea frons* (p. 35). It appears the reference is to southern populations of *Crassostrea virginica*. Perhaps the vernacular malaprop "Coon Oyster" should be replaced by a more apt cognomen. Such a convenient remedy is available for common, as opposed to scientific, names; by convention we'll have to grapple with *Cassia madagascariensis* and *Epitonium novangliae* for perpetuity.

On the matter of vernacular names, Abbott has not conformed to the American Fisheries Society's *Common and Scientific Names*....., but he comes close. It appears he has modified a number of names from earlier editions and headed in the direction of A.F.S. The argument for uniformity is pretty strong; there should be a meeting of the minds in the future.

On page 131 A. [sic] *T. alveus* appears in the remarks under *Lottia testudinalis*. It "is a form that lives on . . . eelgrass [sic] . . ." Recent literature indicates that *Lottia alvea* is extinct and was a full species. In fact this appears to be the only extinction of a marine mollusk in recorded history.

Readers who use indices will find listings under generic headings (vernacular and scientific names alike), which can stymie one in pursuit of a species reassigned from a familiar genus — no such problem with vernacular names (once standardized).

The plate captions contain a minimum of errors, but the reviewer would like to offer some ideas as to his interpretation of the illustrations as the fauna is one with which he has struggled for decades — under the guidance of Abbott, of Clench, and of Morris. Plate 3: *Nodipecten nodulosus* demands excision of the "ul." Plate 6: Lightning Whelk young "ready to hatch" appear to be empty shells. Plate 14: Shark Eye is sinistral. Plate 20: the line connecting the shells in the right lower corner should be horizontal and just above the figure "8." Plate 23, fig. 6 seems not to be *Petricola lapicida* but *Rupellaria typica*; fig. 9 looks like *Corbula barrattiana*, rather than *contracta*. Plate 26, fig. 10 should read "11"; fig. 10 is *Lima pellucida*. Plate 30, fig. 15 has the same predicament as Pl. 23, fig. 6. Plate 32 appears to have a Byzantine system of transpositions: for fig. 11 use caption 15; for fig. 12, caption 11; fig. 15, caption 16; figure 16, caption 12.

Plate 37, fig. 10 looks like *Periploma margaritaceum*, not *anguliferum*. Plate 38, fig. 3 *Gastrochaena hians*, not *Spengleria rostrata*. Plate 40, fig. 17 *Emarginula dentigera*, not *pumila*. Plate 44, fig. 6 *Littorina mordax* (Bandel & Kadolsky, 1982), not *ziczac*. Plate 48, fig. 10: *Epitonium humphreysi* needs one more (terminal) "i." Plate 53, fig. 4 seems to be *Trivia maltbiana*, not *suffusa*. Plate 54, fig. 9: *Natica carena* is *canrena*. Plate 55, fig. 4: *Cymatium pileare* is not this shell; this is the closely related Atlantic cognate, *martinianum* (d'Orbigny, 1842); fig. 8 seems to be *C. vespacium* all right, but the text refers, at least in large part, to *comptum* (A. Adams, 1854). *Vespacium* is exceedingly rare in the western Atlantic — only two records; figs. 14 and 15 appear transposed. Plate 57, fig. 6 is *Busycon carica* form *eliceans*, not *perversum* (as this taxon is treated in the text).

Pl. 58 has *Murex* as the genus for figs. 5 and 6. This generic assignment should probably yield to *Haustellum* Schumacher or *Lindamurex* Petuch; fig. 11: *Colus stimposoni* needs to shed its middle "o." Plate 61, fig. 10: *Hyalina veliei* should be *Prunum succinea* (or -um; it's arguable) (Conrad, 1846), an earlier name. Plate 62, fig. 1 appears to be neither a *Tritonoharpa* nor *obscura*. It appears to be *Colubraria testacea* (Mörch, 1877); *C. obscura* is somewhat similar, but Indo-Pacific; fig. 10 is *Anachis semiplicata* (Stearns, 1873), not *lafresnayi*. This misrepresentation (using a different specimen!) was present in the third edition also. Plate 65, fig. 5 may be better called *Zonulispira crocata* (Reeve, 1844), a generic reassignment/senior synonym for *Crassispira sanibelensis*. Readers who wish to investigate the preceding corrigenda need only refer to Dr. Abbott's *American Seashells* (second edition) for many of these perspectives.

This is a fine work, which accurately and aesthetically attests to the 48 years of progress in biology and technology since Morris' book made its appearance. It fulfills its purpose as the quintessential field guide for shell collectors and is almost obscenely affordable in paperback. Master editor Peterson's admonition (p. vi), "Do not leave it at home on your library shelf; it is . . . meant to be used," epitomizes the value of this work (especially in paperback). The senior author has thus placed his stamp on yet another benchmark work on seashells. And the reviewer can take measure, once again, of a half century of his nurture and contentment derived from the labors of Drs. Abbott, Morris, and Peterson. Other readers of all ages are encouraged to join the celebration and allow this *Field Guide* to lead them over horizons to a better understanding of wonderment over this splendid fauna.

— Harry Lee

Due to a last minute production change in the March issue, there are errors in the caption to the illustration for Emily Vokes' article on *Murex peasei* (pp. 18-19). All size increases should be half the printed number: $x\ 4 = x\ 2$; $x\ 5 + x\ 2\frac{1}{2}$, etc.

ON THE HIGH COST OF BOOKS:

Pursuant to our review of Dr. Rüdiger Bieler's new book on the Architectonicidae in the December *American Conchologist*, Dr. Bieler wrote:

I really liked your review! And I do think it is entirely appropriate (and necessary) to address the price issue. Every review that has come out did mention it — I would have if I had been a reviewer!

....It might surprise some of the readers that an author of a scientific article or monograph is usually not at the controlling (let alone receiving) end of the publication costs. I had hoped for a rather wide distribution (I know, in that case I should have written something about cones or cowries...) and was hoping that the publisher would follow the "many inexpensive copies" approach. When it didn't work out that way, I ended up not only disappointed, but rather somewhat embarrassed: I can't afford to send free copies to many of the friends and colleagues who helped me during the ten years it took to write the monograph!

Anyway, there's nothing I can do about it now. The second part (Atlantic species; still in preparation) will certainly be published somewhere else.

Rüdiger Bieler

The Field Museum Dept of Zoology
Roosevelt Road at Lake Shore Drive
Chicago, IL 60605

Tom Rice's **Catalog of Dealers' Prices** is now ready for distribution. Price is \$19.50 + \$1.50 Book Rate or \$3.00 Priority Rate in U.S. North, Central or South America; add \$2.00 for Surface Book Rate, \$3.00 Air Mail. Europe: Add \$7.50; All Other: \$8.50. Order from Of Sea and Shore Publications, P. O. Box 219, Port Gamble, WA 98364 USA.

Life History and Biogeography: Patterns in *Conus* by Alan J. Kohn and Frank E. Perron. Oxford Science Publications, Oxford Biogeography Series No. 9. Clarendon Press. 114 pp. 2 pp color illustrations, halftones, line figures, tables. Available from Mal de Mer Enterprises.

The first book to show how life history attributes affect dispersion and in turn determine biogeography, and written by world experts on *Conus*, this book addresses a highly topical and controversial question in biogeography. Containing much original, previously unpublished research, this book describes the conspicuous, colorful and ecologically important snail genus *Conus*. It provides what is probably the best and most extensive data set of life parameters available from any tropical invertebrate taxon. The conclusions drawn are likely to apply to many coral-reef invertebrates and thus ensure the book's significance for all those interested in the study of biodiversity.

Contents: Introduction, Reproductive biology of *Conus*; Collections and observations; Relationships among aspects of reproduction and life history; Relationships of development and biogeographic patterns; *Conus* development outside the Indo-Pacific region; Discussion, synthesis, and conclusions; Index.



FLOWERS TO:

Walter Sage is again in our thoughts and prayers. Since the March issue came out he has been through a second cancer surgery. This time the doctors feel that the cancer is completely removed, and Walter is feeling a lot better because he is able to open his mouth and is not facing more radiation treatments. But he still has reconstructive surgery facing him and his road to full recovery may be long. And as if this weren't enough to bear, Walter's father, Walter E. Sage, Jr. passed away just a few weeks after this second surgery. Walter, our hearts and our best wishes go out to you from all over the U.S. and the shell world. Your strength in this adversity is an example to us all.



1995 SUMMER & FALL SHELL SHOWS AND MEETINGS

by Donald Dad, COA Trophy Director

- Jul. 8-9 **Keppel Bay Shell Show**, Yeppoon, Queensland, Australia
Jean M. Offord, 277 McDougall St.,
N. Rockhampton, Qld. 4701, Australia (79) 283-509
- Jul. 14-16 **Jacksonville Shell Show**, Atlantic Beach, Florida
Judy Blocker, 102 Magnolia Street
Neptune Beach, FL 32266 (904) 246-4012
- Jul. 29-30 **Townsville Shell Show**, Townsville, Queensland, Australia
Glenda Rowse, 19 Farrell Street
Kirwan 4814, Queensland, Australia (77) 732-817
- Aug. 17-19 **Jersey Cape Shell Show**, Stone Harbor, New Jersey
Jersey Cape Shell Club, P.O. Box 124
Stone Harbor, NJ 08247 (609) 653-8017
- Sept. 8-10 **Cairns Shell Show**, Cairns, Qld., Australia
Barbara Collins, House of Ten Thousand Shells
32-34 Abbott St., Cairns 4870
Queensland, Australia (70) 51-3638
- Sept. 16-17 **Central Florida Shell Show**, Orlando, Florida
Helen Kwiat, 1329 Sterling Oaks
Casselberry, FL 32707 (407) 695-3887
- Sept. 16-17 **International Shells & Fossils Bourse**, Ottmarsheim, France
Michel Rioual, 2 Rue des Vergers
68490 Ottmarsheim, France 89-26-16-43
- Oct. 6 - 8 **Annual German Shell Fair**, Kirchheim Teck, Germany
Edmond Trippner, Im Dosjiler 19
73230 Kirchheim Teck, Germany FAX (7153) 25-048
- Oct. 28 **British Shell Collectors' Club Shell Show**, London, England
Kevin Brown, 12 Grainger Road
Isleworth, Middlesex TW7 6PQ, England (81) 568-8333
- Nov. 4-5 **Gulf Coast Shell Show**, Panama City, Florida
Jim & Linda Brunner, P.O. Box 8188
Southport, FL 32409 (904) 265-5557
- Nov. 10-12 **Philadelphia Shell Show**, Philadelphia, Pennsylvania
Al Schilling, 419 Linden Ave.
Glenside, PA 19038 (215) 886-5807
- Nov. 17-19 **North Carolina Shell Show**, Wilmington, North Carolina
John Timmerman, 32 JEB Stuart Drive
Wilmington, NC 28412-1700 (910) 452-0943

2620 Lou Anne Court, West Friendship, MD 21794, USA. (410) 442-1242 or 442-1942

RECENTLY INTRODUCED NAMES IN THE FAMILY CONIDAE SINCE 1990

by Walter E. Sage, III

Cone names are, in themselves, a massive body of literature. In 1937, the *Journal of Molluscan Studies*, London, published J.R. Le B. Tomlin's "Catalogue of Recent and Fossil Cones." Containing over 2,700 species-group names, this work quickly became the chief reference for cone collectors the world over. Even with this huge number of cone names, however, it didn't cover the nomenclatorial explosion in the family Conidae that has taken place in this later portion of the 20th century.

It was in 1979 that Dr. Alan J. Kohn and Alan C. Riggs brought Tomlin's list up to (the then) date with their "Catalogue of Recent and Fossil Conus, 1937-1976," again published in the *Journal of Molluscan Studies*. This update contained some 300 names that were proposed in that period, and 77 more names Tomlin had omitted prior to 1937.

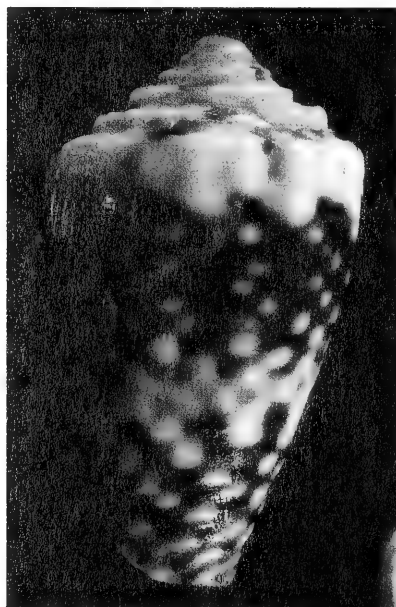
Since 1976, there have been several updates. The most recent of these was a two-part article I did in the September

and December 1990 issues of *American Conchologist*, compiled through August 1, 1990. It contained 259 names, 177 of them listed for the first time. The list on page 9 updates that to Jan 31, 1995. The purpose of this list is to call to the attention of those interested in cones the existence of these names and to give brief citation of the publication in which each name first appeared. No attempt is made to establish which names represent valid species. Those names preceded by an asterisk (*) represent western Atlantic species, and are followed by the type locality in parentheses.

I have personally examined each publication cited, and believe this listing to be complete. Readers are asked to communicate any names that may have been overlooked, and to write for additional information that may be at my disposal.

The writer is grateful to those authors who have supplied copies of their publications, without whose assistance this compilation would not have been possible.

Department of Invertebrates, American Museum of Natural History, Central Park West at 79th St. New York, NY 10024-5192.



Conus biraghii
(G. Raybaudi, 1992).
HOLOTYPE



Conus lizarum (G. Raybaudi
& DaMotta, 1992).
29.1 X 14mm. HOLOTYPE



Conus bondarevi Röckel &
G. Raybaudi, 1992.
36.2 X 26mm. HOLOTYPE



Conus norai
da Motta &
G. Raybaudi, 1992.
37.4 X 22.8mm.
HOLOTYPE



- adamii* Bozzetti, 1994 - **World Shells** 9, p. 81 (as *Conorbis* — compared to *coromandelicus* Smith, 1894)
- amplus* Röckel & Korn, 1992 — **Acta Conchylorum** 3, p. 28 (as ssp. of *stramineus*)
- angioiorum* Röckel & Moolenbeek, 1992 — **Acta Conchylorum** 3, p. 46
- austroviola* Röckel & Korn, 1992 — **Acta Conchylorum** 3, p. 8
- baeri* Röckel & Korn, 1992 — **Acta Conchylorum** 3, p. 10
- *bessei* Petuch, 1992 — **La Conchiglia** 23(264), p. 36 (Cayo Caratasca, Honduras)
- biraghii* G. Raybaudi, 1992 — **Acta Conchylorum** 3, p. 31 (as *Leptoconus*)
- bondarevi* Röckel & G. Raybaudi, 1992 — **La Conchiglia** 23(264), p. 25
- boschorum* Moolenbeek & Coomans, 1993 — **Apex** 8(1-2), p. 20
- bozzettii* Lauer, 1991 — **Apex** 6(2), p. 33
- *brunneobandatus* Petuch, 1992 — **La Conchiglia** 23(264), p. 37 (Tobajuba, Venezuela)
- cacao* Ferrario, 1983 — **La piu Grande Enciclopedia Mondo** 1, p. 146 omitted previously
- *caysalensis* L. Raybaudi & Prati, 1994 — **World Shells** 8, p. 9 (Cay Sal Bank, Bahamas)
- cebuensis* Wils, 1990 — **Gloria Maris** 29(2), p. 25 (as ssp. of *proximus*)
- congruens* Korn & G. Raybaudi, 1993 — **La Conchiglia** 25(268), p. 33 (as ssp. of *biraghii*)
- darkini* Röckel, Korn & Richard, 1993 — **La Conchiglia** 25(267), p. 48
- *duffy* Petuch, 1992 — **La Conchiglia** 23(262), p. 9 (Esparqui, Los Roques Archipelago, Venezuela)
- *flammeacolor* Petuch, 1992 — **La Conchiglia** 23(264), p. 38 (south of the Cayos Vivorillo, Honduras)
- friedae* da Motta, 1991 — **La Conchiglia** 22(258), p. 12 (as *Eugeniconus*)
- gabryae* Korn & Röckel, 1992 — **Acta Conchylorum** 3, p. 13
- *glenni* Petuch, 1993 — **La Conchiglia** 25(266), p. 58 (Moro Tupo, San Blas Islands, Panama)
- *goajira* Petuch, 1992 — **La Conchiglia** 23(264), p. 39 (Cabo La Vela, Colombia)
- guanche* Lauer, 1993 — **Apex** 8(1-2), p. 37
- helgae* Bloecher, 1992 — **Acta Conchylorum** 3, p. 35
- *henniquini* Petuch, 1992 — **La Conchiglia** 24(265), p. 10 (La Vauclin, Martinique)
- huberorum* da Motta, 1989 — **La Conchiglia** 21(242-245), p. 9 omitted previously
- jeanmartini* G. Raybaudi, 1992 — **La Conchiglia** 23(263), p. 46 (as *profundiconus*)
- korni* G. Raybaudi, 1993 — **La Conchiglia** 25(267), p. 24
- lizarum* G. Raybaudi & da Motta, 1992 — **Publicações Ocasioneis da Sociedade Portuguesa de Malacologia** 16, p. 65 (as *Hermes*)
- lovellreevei* G. Raybaudi, 1993 — **Gloria Maris** 32(1), p. 3
- maioensis* Trovão, Rolán & Félix-Alves, 1990 — **Publicações Ocasioneis da Sociedade Portuguesa de Malacologia** 15, p. 71
- mauritiensis* Lauer, 1992 — **Publicações Ocasioneis da Sociedade Portuguesa de Malacologia** 16, p. 54 (as ssp. of *episcopus*)
- meridionalis* G. Raybaudi, 1989 — **Argonauta** 5(5-6), p. 62 [form of *inscriptus* — no scientific standing]
- morrisoni* G. Raybaudi, 1991 — **La Conchiglia** 22(260), p. 20 (as *Dendroconus*)
- neofafricanus* da Motta, 1991 — **La Conchiglia** 22(258), p. 73 replacement name
- neobuxeus* da Motta, 1991 — **La Conchiglia** 22(258), p. 73 replacement name
- neoguttatus* da Motta, 1991 — **La Conchiglia** 22(258), p. 73 replacement name
- neoroseus* da Motta, 1992 — **La Conchiglia** 24(265), p. 29 replacement name
- nigromaculatus* Röckel & Moolenbeek, 1992 — **Acta Conchylorum** 3, p. 46
- nitens* Lauer, 1993 — **Apex** 8(1-2), p. 39 (as ssp. of *guanche*)
- *norai* da Motta & G. Raybaudi, 1992 — **Publicações Ocasioneis da Sociedade Portuguesa de Malacologia** 16, p. 61 (Pte. de la Baleine, sw coast of Martinique)
- manensis* Moolenbeek & Coomans, 1993 — **Apex** 8(1-2), p. 21 (as ssp. of *biraghii*)
- *poulosi* Petuch, 1992 — **La Conchiglia** 24(265), p. 11 (Cabo La Vela, Colombia)
- renateae* Cailliez, 1993 — **La Conchiglia** 25(267), p. 51 (as ssp. of *nobilis*)
- *richardbinghamae* Petuch, 1992 — **La Conchiglia** 24(265), p. 11 (Tuna Alley area, Great Bahama Bank, Bahamas)
- richardsae* Korn & Röckel — **Acta Conchylorum** 3, p. 16 (as ssp. of *luteus*)
- sagei* Korn & G. Raybaudi, 1993 — **La Conchiglia** 25(268), p. 37
- solomonensis* Delsaerd, 1992 — **Gloria Maris** 31(4-5), p. 17
- stocki* Coomans & Moolenbeek, 1990 — **Bijdragen tot de Dierkunde** 60(3/4), p. 258
- subroseus* Röckel & Korn, 1992 — **Acta Conchylorum** 3, p. 19
- *velaensis* Petuch, 1992 — **La Conchiglia** 24(265), p. 14 (Cabo La Vela, Colombia)
- *vikingorum* Petuch, 1992 — **La Conchiglia** 24(265), p. 15 (Puerto Colombia, Colombia)

NOTES AND NEWS

by Gene Everson

The COA welcomes a new exchange club from Australia. We now receive the **Phasianella**, Bulletin of the South Gippsland Branch of the Malacological Society (of Australia). The address is P.O. Box 591, Morwell, Australia. The newsletter editor is Eddie Buelke, whom many of us have met at COA conventions.

It's a tough life: The Pacific Shell Club received a letter from Al and Gwen Vaccaro, members living on the Kwajalein Atoll. After two paragraphs of pleasantries, Al mentioned, "I found **GOLDEN COWRY #11** last weekend. It was a night dive in about 60 feet."

Shell and Tell, the Newsletter of the Gulf Coast Shell Club, reports on a trip to Isla Margarita, Venezuela in Oct. 94 by Barbara Barfield, Jane and Bob Stark, and Linda and Jim Brunner. The entire article was interesting, but one thing really caught my eye! While beachcombing along the main highway, lifting shallow rocks to the surface to examine the undersides, they found several large *Muricopsis withrowi*. This collector's item species is difficult to find at night with SCUBA in most of its range (I've tried and failed), but I have never heard of it found live by wading.

Jacksonville Shell Club **Shell-O-Gram** reports that the Florida Marine Fisheries Commission is proposing to give "gamefish" status to the popular bay scallop, *Argopecten irradians concentricus* (Say, 1822). The rule, when approved by the Governor and Cabinet, will prohibit commercial harvest and sale of the scallops and reduce recreational bag limits to two gallons of unshucked scallops, or one pint of meat per person per day. The regulation will allow scallop diving only on July 4 and 5, and from August 1 to September 30. There will be no diving in state waters south of the Suwannee River.

The **Northern California Malacozoological Club Newsletter** (Oct. '94) reported that they awarded a student grant to Tim Rawlings, a student at the Bamfield Marine Station, Bamfield, British Columbia. His proposed research project is on "The Role of Neogastropod Egg Capsules in Protecting Developing Embryos from Ultraviolet Radiation." Mr. Rawlings hopes to present his research at the Western Society of Malacologists meeting in Fairbanks, Alaska in June.

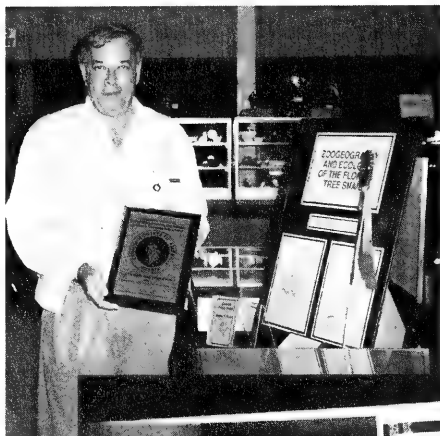
500 Nottingham Parkway, Louisville, KY 40222

THE NAUTILUS (Vol. 108, No. 1, June 1994): Bruce A. Marshall reports on "Deep-sea Gastropods from the New Zealand Region Associated with Recent Whale Bones and an Eocene Turtle." Five species of gastropods are recorded from decaying whale bone, and another associated with turtle bones. Of these 6 species, Marshall described one in 1987 and 4 others in this article. One, *Paracocculina cervae* (Fleming, 1948), is now known to be associated with sunken wood, algal holdfasts, and whale bone, giving it the most diversified habitat of any known cocculiniform limpet.

There are interesting similarities between faunas associated with decaying whale bones and those associated with hydrothermal vents and hydrocarbon seeps, which suggests that whale bones may provide stepping stones for wide dispersal of deep-sea chemosynthetic communities. This whale bone habitat appears a rich environment for mollusks, as one of the new species, *Osteopelta praeceps*, was found in the several hundreds, and five of the six were found among crowded mytilids.

—Gene Everson

COA TROPHY WINNERS

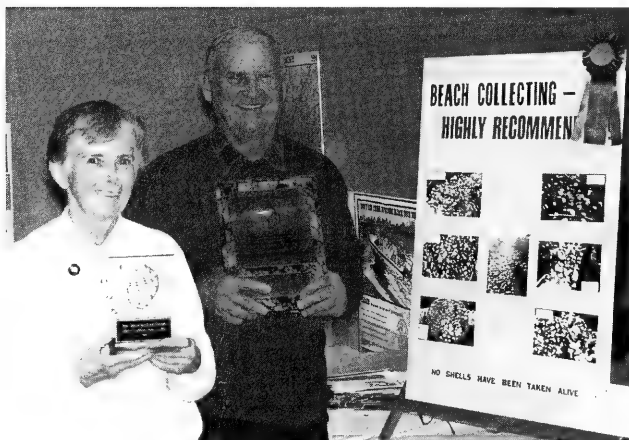


Emilio Power is the winner of the COA Trophy awarded at the Astronaut Trail Shell Show, January 21-22, 1994. His winning exhibit, entitled "Zoogeography and Ecology of the Florida Tree Snail," featured five cases treating the taxonomy and origins of the famed *Liguus*, as well as its ecology.

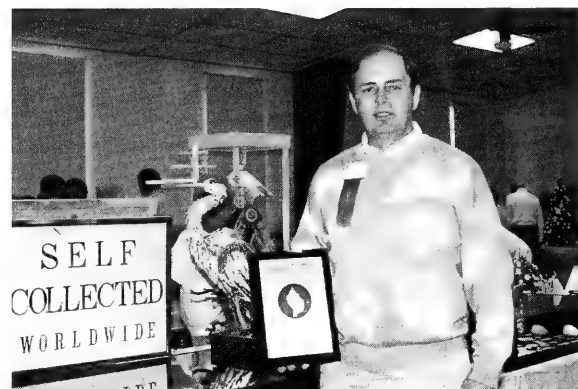


Holly Lane was the COA Trophy winner at the Oregon Society of Conchologists Shell Show held at the Museum of Science and Industry in Portland in late January. Holly's exhibit was titled, "Jewels of the Sea" and was put together with the beginner in mind, detailing the how-to's of collecting, cleaning and storing shells. Note in the photo that the Museum allows each exhibitor a showcase. Congratulations, Holly.

Dick Plester won the COA Trophy at the 1994 British Shell Collectors' Club Shell Show for his exhibit of Mitrinae. Our congratulations to Dick for his fine work. Mary Brown is awarding the trophy to Dick while Daphne Howlett, the Judges' Steward, is standing just behind her.



The North Carolina Shell Show awarded the 1994 COA Trophy to Dean and Dorothy Weber for their 24' exhibit, "Beach Collecting — Highly Recommended." The shells in their exhibit were all self-collected, but from worldwide sources. Their exhibit also won the North Carolina Shell Club Trophy for the Best Self-Collected Exhibit. Nice work, Webers! Photo by Vicky Wall



Gene Everson displays his COA Trophy in front of his winning exhibit entitled: "Self-Collected Worldwide." Gene won his trophy at the Southwest Florida Conchologist Society's 26th Annual Shell Show in mid-February. Gene says his specimens were found mainly in SCUBA depths, but some were taken wading, snorkeling or dredging. A small exhibit of only 12 feet, it contains 5 shells which have previously won "Shell of the Show" awards.

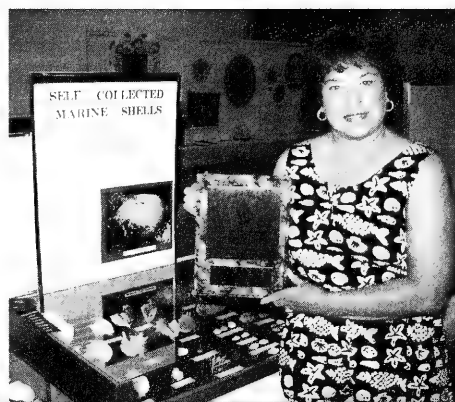


Andy and Greta Murray, pictured here with show judge Jim Brunner, are the winners of the 1994 COA Trophy at the St. Petersburg Shell Show. Their winning exhibit was "Fossil Fauna of the Alum Bluff Group." Sorry we're so late with this, Greta and Andy. We hear it was a really fine exhibit! Thanks for your patience.



Dave Nesheim, second from left, was the COA Trophy winner at the 1994 Pacific Shell Club Shell Show for his fine exhibit of *Pterynotus trialata*. Congratulations on a great exhibit, Dave. Forgive us for making you share the limelight with all these other people. We're so glad to see a California shell show back on the circuit that we wanted to show more of it. Those other people are, from left, new **American Conchologist** Editorial Board member and frequent contributor Don Shasky, who won the PSC Best Self Collected trophy; Twila Bratcher Critchlow, a judge at the show, looking fine and fit after her long recovery; Paul Kanner with his DuPont trophy for a pecten exhibit; and David Schroeder who won the People's Choice Award.

Accomplished diver Charlotte Lloyd stands before her exhibit, "Self Collected Marine Shells." She's holding the COA Trophy she won for this exhibit at the 1994 Jacksonville Shell Show in August. Nice work, Charlotte! We wish we could see more of it!

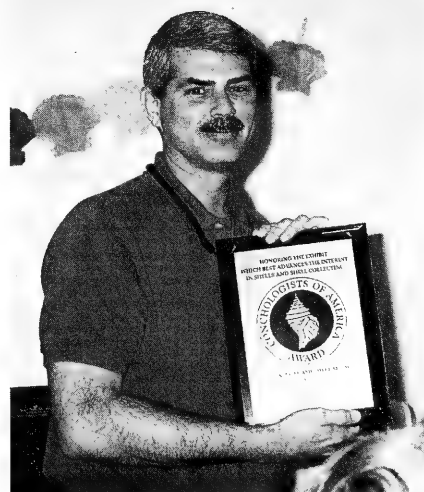


"Classification of the Family Angariidae" won a COA Trophy for Helen Kwiat at the Central Florida Shell Show last September 16-18. Helen's exhibit featured models of live animals as well as shells, and showed why a separate family has been erected for the group.



President of the Keppel Bay Shell Club, Allan Davidson (center), presents Arthur and Irene Prowse with the 1994 COA Award at the Keppel Bay Shell Show in July for their winning exhibit, "Shells with Common Names and Why."

John Chesler, COA member from Broward Shell Club entered the "Florida and/or Caribbean - One Major Family, Any Source" category of the Greater Miami Shell Show in late January with an exhibit of Western Atlantic Muricidae. The exhibit was such an excellent one that it won the COA Trophy for him. Congratulations, John!



"World Wide Cypraea" was the subject of the Little family's winning exhibit at the St. Petersburg Shell Show in mid-March. Jo and Gene are shown above, sporting happy smiles and a shiny new COA Trophy, along with a pair of other awards this fine exhibit picked up: Shell of the Show for a *Cypraea iutsui* and the Single Family (Major Interest) Award.



MORE COA TROPHY WINNERS



Tom Grace from New Jersey went all the way to the 1995 Treasure Coast Shell Show (March 17-19) to show off his exhibit of Haliotidae, and win a COA Trophy. Tom's abalones had already won the duPont Trophy in November at Philadelphia (above center, with Philadelphia show judges Bev and Al Deynzer.) His exhibit featured over 70 species and subspecies of the Haliotidae, along with information about their anatomy and their cultural, gastronomic and commercial aspects.

B.J. Sessoms won the COA Trophy at Philadelphia's first competitive shell show last November for his exhibit, "What Is A Seashell?" "This is basically a family tree...some common shells, some exotic shells. Its purpose is to catch the attention of beginners or non-collectors and get them going." Congratulations, J.B.

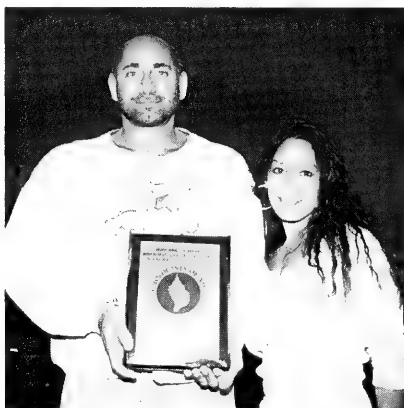
We also want to draw your attention to this new show on the autumn shell show circuit. Those people in Philadelphia really want you to attend their next show; in fact, they have taken out an ad in *American Conchologist*, just to invite you. There's plenty of time until November...let's get those exhibits ready and travel plans made. We hear Philadelphia Show #1 was lots of fun.



Gloria and Kermit Pearson were the pleased winners of the COA Trophy at the Naples Shell Show Feb. 24-26, 1995. Their winning exhibit was entitled "The Cones of Kwajalein Atoll" and featured four cases of cones. Shown above Kermit and Gloria is one of the cases from their exhibit, along with information about their habitats on Kwajalein.



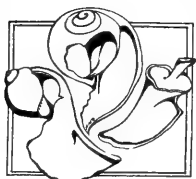
Steven Dueñas was the happy winner of the COA Trophy at the 58th Sanibel Shell Fair, March 2-5, 1995. His exhibit featured 153 species of "Cones of the Philippines." Our congratulations to you, Steven.



The Sarasota Shell Show was the event where COA members Rob and Denise Masino from Fort Myers won their COA Trophy. Judges Walter Sage and Charlotte Lloyd awarded them the trophy for their exhibit of Pleurotomaria at the late February show.

Gary Schmelz, COA member from Naples, has won the COA Trophy at the Marco Island Shell Show for the second year in a row. His winning exhibit, "Sea Shells of Chub Cay," featured specimens collected at Chub Cay in the Bahamas with photos of their habitats and associated marine life. Nice work, Gary! Plan to make it three in a row? Sorry, no photo available.

"Shells of the Offshore Reefs of Palm Beach, Martin, and St. Lucie Counties" was the title of the COA Trophy-winning exhibit at the Broward Shell Show in early February. The creator of this fine exhibit was Linda Zylman Jacaruso, COA member from the Treasure Coast Shell Club. Linda's entire exhibit was self-collected — wish we had a photo of it!



PUBLICATIONS ON FOSSIL MOLLUSCS

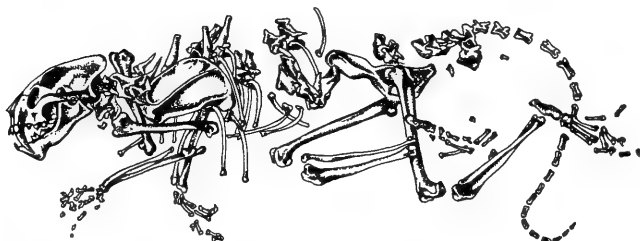
Mari Hughes sends us information about two U.S. Government publications on fossils that are free for the asking. She says:

I have some exciting news for you... First I received a very large handsome poster-like publication, "Fossils through Time." It is very informative, and for us, it has mollusks. Then I got a small booklet, "Fossils, Rocks and Time." It is clear and has fine information and is a learning experience all around, and all free from our government to us.

USGS Order Number: OD 00000041355
and: 00000046033

Send to: U.S. Geological Survey
Branch of Distribution
P.O. Box 25286
Denver Federal Center
Denver, CO 20225

JAPH'S PRETTY GOOD FOSSIL BOOK OF THE DAKOTA TERRITORY



Japeth Boyce has written and Terri Haag has illustrated this fine little guide to a specialized subject, the fossils, including marine invertebrates, of the Dakotas. Published in 1991, it was brought to our attention by Don Dan, a highly respected COA board member, editorial board member, and shell and sometimes fossil dealer. His suggestion that I review it at this time for our fossil literature column was, in part, to contribute to our column, in part to help the authors gain recognition for their very helpful contribution to fossil publications, and in part, I suspect, because of the introduction and its commentary on current events.

Here, the review; elsewhere we'll reproduce, separately, most of Japeth Boyce's introductory essay on fossil collecting and legislation: **Japh's Pretty Good Fossil Book** is a very helpful little book, acting as a primer to both Dakota stratigraphy and geologic history, and to its prehistoric life. Most of the fossils covered are vertebrates, particularly reptiles, many of them land species. But during several geologic expanses of time, portions of the Dakotas were under the sea. Especially during the Cretaceous, many cephalopod species lived in the waters covering the Dakotas and left their fossil remains in the deposits there. The Dakotas are known for their ammonite fossils. Lovely complete specimens of coiled ammonites are frequently found in the Fox Hills region and the Pierre Shale. Uncoiled cephalopods known as *Baculites* and squid-like creatures called *Belemnites* left their odd and beautiful shells. And the Pierre Shale region was known to

contain a strangely coiled creature called *Didymoceras cheyennensis* which was both so loosely and so oddly coiled that one wonders if it could swim. Terri Haag's illustrations excellently figure these exotic shells.

Numerous charts and explanatory sections and essays on special topics fill out the book, which is otherwise composed of Ms. Haag's drawings accompanied by chatty, informal and yet sometimes extensive comments on each species. Faunal lists and a more-than-adequate bibliography conclude the 8 1/2" X 11" paperback guide, published by the R.J.B. Rock Shop, 4350 Cliff Drive, Rapid City, S.D. 57702. We encourage you to invest in it if you have any interest in fossil cephalopods, in paleontology in general, or in collecting in the Dakotas.

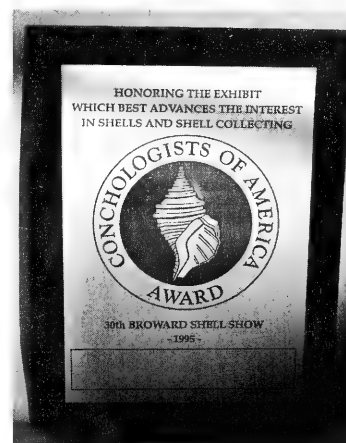
See also the review of Dr. Ed Petuch's *Atlas of Florida Fossil Shells*, this issue.

COA AWARD NEWS

by Don Dan, COA Trophy Director

A NEW PLAQUE

DESIGN was introduced at the COA Convention in Corpus Christi, Texas. Yes, beginning January 1995, we have a brand new design, thanks to the helping hands of our member, Charles Barr. The new brass plate is attached to a half-inch-thick black acrylic base. Focus is placed on our emblem shell. The bold and yet very clean look attests to the graphic expertise of Charles Barr. The previous design, adopted in 1991, has to be retired because the green marble used as its base is no longer imported.



THE BELGIUM INTERNATIONAL SHELL SHOW becomes the fourth overseas shell show to carry the COA Award. The other three are: Keppel Bay Shell Show in Queensland, Australia; the International Shell Show in Lutry, Switzerland, and the British Shell Collectors Club Shell Show in London. We warmly welcome the Belgium International Shell Show to the growing circle of COA Award shell shows around the world. This year Belgium will be holding its fifth show.

Besides giving out this prestigious Award, which represents one of the highest honors at each of these events, all these shows also subscribe to a uniform set of "Guidelines for Sound Judging Process." Adherence to these guidelines has proven to be a very important factor in maintaining high standards of the jury process. A total of 23 active shell shows, including 19 in the U.S., currently subscribe to COA Guidelines.

THE PHILADELPHIA SHELL SHOW will repeat its competitive format for 1995. Last year the shell displays were open to competition for the first time and the new format was well received. Among the top awards given at this show is the COA Trophy. The only regularly held shell show in the populous northeastern U.S., the Philadelphia Shell Show has become a highly successful annual event. This year's show will take place on November 10-12. The Philadelphia Shell Club welcomes all out-of-town exhibitors to enter their show. Please contact Al Schilling, 419 Linden Avenue, Glenside, PA 19038. ☎ (910) 452-0943.

CONCHATENATIONS

by Gary Rosenberg

New species

Listed here are eighteen species of Western Atlantic gastropods described since the beginning of 1993. Most of these species might be found in scuba-diveable depths, or even in beach drift in the case of the *Epitonium* species.

Perotrochus maureri Harasewych & Askew, 1993

Nautilus 106:130-136, figs 1-10. Size 59.5 mm. Type locality: 90 nautical miles E of Charleston, South Carolina. Depth: 193-366 meters. Also reported off east Florida; previously confused with *Perotrochus amabilis* (Bayer, 1963), which occurs in the Gulf of Mexico and farther south.

Epitonium phymanthi Robertson, 1994

Nautilus 107:83-87, figs 1-11, 13. Size: 16.9 mm. Type locality: Bear Cut, Miami, Florida (25°43'N, 80°09'W). Depth: 0-2 m. Also reported from Grand Bahama Island, St. Thomas, St. Croix, and Grenada.

Epitonium worsfoldi Robertson, 1994

Nautilus 107:87-89, figs. 14-19. Size: 25.3 mm. Type locality: Smith's Point, Grand Bahama Island (26°31'N, 78°37'W). Depth: 1 m. Also reported from Eleuthera, Abaco, and Cat Island, Bahamas, Matanzas, Cuba; Puerto Rico and St. Croix.

Sconsia alexarthuri Parth, 1994

Spixiana 17:175, fig. 1. Size: 46.4 mm. Type locality: Virgin Islands. Depth: 170 fathoms (310 m.).

Attiliosa glenduffyi Petuch, 1993

La Conchiglia 24(266):54, figs 6-7. Size: 14 mm. Type locality: Samana, Dominican Republic, Hispaniola. Depth: 1-5 m.

Bolinus hamanni Myers & Hertz, 1994

Veliger 37:201-203, figs. 1-2. Size: 101 mm. Type locality: Isla La Blanquilla, Lesser Antilles, Venezuela (11.53N, 64.38 W). Depth: 18-25 m. Note: This species was compared to *Haustellum chrysostoma* (Sowerby, 1834) and should be classified as *Haustellum hamanni* rather than as a *Bolinus*; it resembles *Bolinus* superficially in having 4-5 varices rather than the 3 typical in *Haustellum*.

Favartia barbarae E.H. Vokes, 1994

Tulane Studies in Geology and Paleontology 36:134-135, pl. 23, figs. 5-6. Size: 21 mm. Type locality: 180 km east of Arrecife Alacran, or approximately 75 km. due north of Río Lagartos, Yucatan. Depth: 90 m.

Muricopsis josei E. H. Vokes, 1994

Tulane Studies in Geology and Paleontology 26:69-70, pl. 6, figs. 4-6. Size: 21.5 mm. Type locality: Guarapari, Espírito Santo, Brazil. Depth: 10-15 m.

Muricopsis marcus E.H. Vokes, 1994

Tulane Studies in Geology and Paleontology 26:70-71, pl. 6, figs. 3-4. Size: 29.7 mm. Type locality: Cabra Island, Ilhabela, São Paulo, Brazil. Depth 0-7 m.

Muricopsis perexigua E.H.Vokes, 1994

Tulane Studies in Geology and Paleontology 26:68-69, pl. 4, figs. 5-6. Size: 7 mm. Type locality: Grand Bahama Island, Bahamas. Also reported from Honduras.

Muricopsis warreni Petuch, 1993

La Conchiglia 24(266):55, figs. 8-9. Size: 24 mm. Type locality: Montego Bay, Jamaica. Depth: 15-30 m.

Muricopsis zylmanae Petuch, 1993

La Conchiglia 24(266):55-56, figs. 10-11. Size: 44 mm. Type locality: Great Isaacs Cay, Bahamas. Depth: 5-24 m.

Poirieria (Pazinotus) bodarti P.M. Costa, 1993

La Conchiglia 25(269):49-51, figs. 1-3. Size: 12.2 mm. Type locality: Between Escalvada Island and Rasa Islands, off Guarapari, State of Espírito Santo, Brazil, 20°41'S, 40°22'W. Depth: 25 m.

Colubraria kathiewayana Fittkau & Parth, 1993

Spixiana 16:189-190, fig.1. Size: 28.7 mm. Type locality: Guarapari, Espírito Santo, Brazil. Depth: 25 m.

Conus glenni Petuch, 1993

La Conchiglia 24(266):58-59, figs. 1-2. Size: 18.5 mm. Type locality: East of Moro Tupo, San Blas Islands, Panama. Depth: 1 m.

Leucosyrinx taludana Castellanos & Landoni, 1993

Catalogo descriptivo de la malacofauna marina Magallanica 11:9, pl. 3, figs. 26,32. Size: 23 mm. Type locality: 46°S, 60°W, off Argentinean coast. Depth: 600 m.

Polystira coltrorum Petuch, 1993

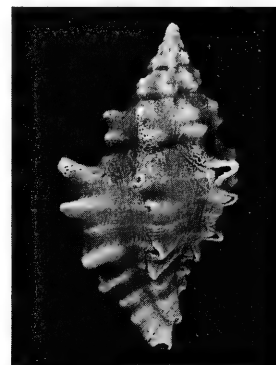
La Conchiglia 24(267):62-63, figs. 19-20. Size: 22 mm. Type locality: Itaparica Is., Bahia State, Brazil. Also reported from the states of Amapa and Rio De Janeiro. Depth: 40 m.

Propebela profunda Castellanos & Landoni, 1993

Catalogo descriptivo de la malacofauna marina Magallanica 11:16-17, pl. 1, fig. 7. Size: 8 mm. Type locality: 46°S, 60°W, off Argentinean coast. Depth: 600 m.

A note on tautonymy

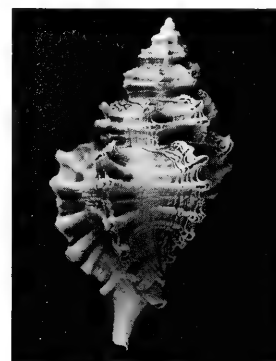
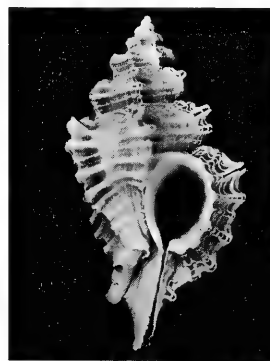
An article entitled "The Sheller's Handbook in **American Conchologist** 21(2), p. 24 said: "Shells carrying tautonymic classification at the time (1930) were allowed to stand, but there will never be another named in this manner." This is a misconception; it is often thought that tautonymous names [*Lambis lambis*, *Rapa rapa*] are no longer allowed; however, the current **International Code of Zoological Nomenclature** (3rd ed. 1985) states in Article 18: "The availability of a name is not affected by inappropriateness or tautonymy." There is currently no official recommendation against tautonyms, but in practice it seems that few, if any, are introduced anymore.



Muricopsis josei E. H. Vokes, 1994. 21.5 X 12.9mm.
MORG 31.963 (All photos by E. H. Vokes.)



Muricopsis marcus E. H. Vokes, 1994. 27.2 X 15.0mm.
PARATYPE MORG 31.962



Favartia barbarae E. H. Vokes, 1994.
21.0 X 11.9mm. HOLOTYPE USNM 880031

THE KURODA COLLECTION

by Paul Callomon

A number of people have contacted me recently for information about the condition of the famous Kuroda collection following the Great Hanshin Earthquake. I am happy to be able to report that despite the widespread destruction in Kobe the collection has escaped serious damage.

The Great Hanshin* Earthquake struck at 5:47 a.m. on January 17. Its epicentre was beneath Awaji Island, southwest of Kobe, and the western parts of the city were worst affected; the quake registered 7.2 on the Richter Scale and land movement near the epicentre exceeded 80 centimetres, both vertically and horizontally. The Kuroda Collection is housed in the Kikuchi Shell Museum in Nishinomiya, which is to the east of the city, but the museum buildings stand on reclaimed land. Any seismic movement is amplified by rippling of the soft, sandy subsoil in such areas, and despite its distance from the epicentre Nishinomiya thus suffered comparable levels of damage to the worst-hit areas.

In the afternoon of the day following the quake I travelled by motorbike to see if the museum had survived. Riding from Osaka, where all was more or less normal, the condition of the areas I passed through deteriorated rapidly as I neared Kobe. By the time I arrived in Nishinomiya I was slowly picking my way through the debris alongside the toppled expressways. The side-roads were more or less passable, but everything was slick with mud which had been forced up through cracks in the road surface as the land rose and fell in great waves. Enough has already been reported elsewhere of the destruction and suffering caused by this, Japan's worst earthquake for 70 years; suffice it to say, my camera stayed in my bag.

I reached the Kikuchi museum in the late afternoon to find all the buildings intact and apparently not seriously damaged. With electricity gone, no lights were showing and the asphalt in front of the gate was cracked and buckled. Everything was locked and I could only peer through the gates and windows. I nosed around for a few minutes before noticing a lone figure on the sea wall at the end of the street. Bundled up against the wind in a hooded parka, it was Dr. Kikuchi himself, the custodian of the Kuroda collection and founder of the museum. He lives nearby, and is usually to be found in the museum or its garden. He was unscathed and as cheerful as one can be in such circumstances. We talked briefly, comparing notes about mutual friends, most of whom had apparently survived, before I asked about the collections. Dr. Kikuchi smiled grimly and led me down to the annexe which houses the library and all but a few of Dr. Kuroda's shells. It's pretty bad," he muttered with a grin as he wound the shutter up.

The specimens of the Kuroda collection are kept, with their original hand-written labels, as well as museum data slips, in glass-topped boxes inside stacked plastic drawer units. The type specimens are in a separate cabinet, and the collection takes up two walls of the small concrete building to head height. Opposite the shells are the bookshelves of the library, made of steel racking tied to the ceiling with bolts. This last detail had proved vital; in the violent boat-like rocking during the quake most of the drawers had slid open and some had come clear out of their chests, scattering their boxes as they hit the floor. A number of the uppermost drawer units had shuffled about until their centre of gravity was so far off the wall that they toppled forwards, their drawers sliding open and disgorging their contents in mid-air. The tables and floor in the centre of the room were covered with thick drifts of boxes and drawers with thousands of specimens loose amongst them. Had

the books fallen on top of this fragile mess, who knows how many more of the shells — among them many delicate land and freshwater snails — would have been crushed? Luck prevailed, however, the books staying put, and thus it was that I gazed through the entrance at a scene of chaos rather than destruction. The sea of loose specimens reached right to my feet, and Dr. Kikuchi pointed out a couple of types among the tiny landsnails scattered among the slippers and umbrellas. We didn't dare enter for fear of mixing things up further, but even from the door the herculean task which re-uniting all the shells with their labels would represent was apparent. "Ah well," chuckled Dr. Kikuchi, "we've got something to do now."

Last Sunday, two months and two days after the quake, I went back to the museum to check up on progress. I was astonished to find not only that all the cabinets and drawers had been replaced and restocked, but that the great majority of the specimens had already been checked and relabelled — all this despite the fact that among the volunteers were some whose houses had been wrecked and others who had lost relatives and friends. It had taken days to restore electricity and weeks to bring back gas, with water the last to be switched back on after almost a month. Nevertheless, the restoration of the Kuroda collection was pursued as a matter of pride and, as of mid-March, the situation is as follows:

Roughly 20% of the collection remains unsorted, the specimens still separate from their labels; very few specimens are actually broken. It seems likely that fewer than 5% of the marine specimens will eventually remain without data, and the figure for landsnails is only a little higher — still under 10%. The main problem is that the collection contains many duplicates differing only by locality; some of the shells date from the thirties and have faded, making re-separation of locality groups within one species impossible. Even so, very little of the collection's reference value has been lost, and it is once again open for examination and study by amateurs and professionals alike.

Although the list of those who helped is very long, four main figures deserve special mention: Dr. Kikuchi himself, Mr. Hideo Katori, Mr. Koichi Yamashita, and Mr. Kenji Ohara. All have put a lot of time and effort into the job, despite their own difficulties, and thanks to them and other members of the Hanshin Shell Club I am able once again to recommend the Kuroda collection as one of Japan's most important malacological reference resources.

Paul Callomon is currently a resident of Osaka, Japan. Born and educated in the U.K. he is a seasoned photographer and avid cone collector. Since moving to Japan seven years ago, he has become fluent in Japanese; having such skill enables Paul to circulate among the Japanese shell collecting groups with relative ease. Through his employment with Yoshihiro Goto's shell publication operations, he has greatly expanded his malacological horizons.

Dr. Norio Kikuchi: little is known of this long time Kobe shell collector outside Japan. A legend among Amami Islanders, Dr. Kikuchi led a team of young medical doctors in dispensing free medical services to the impoverished islanders after World War II. At that time Dr. Kikuchi became enamored of the many shells found in the Amami Islands. Along the way he developed a close association with Dr. Kuroda which resulted in his receiving the complete Kuroda collection, including his library of manuscripts and notes. The Kikuchi Museum, housing this collection, is built on the grounds of the Kaisei Hospital, of which Dr. Kikuchi was longtime director.

In Memoriam

Don Dalrymple

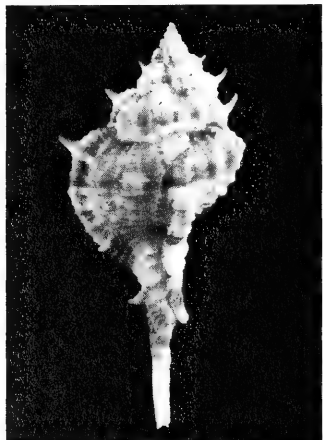
Ted Davies

Kay Cunningham Vaught

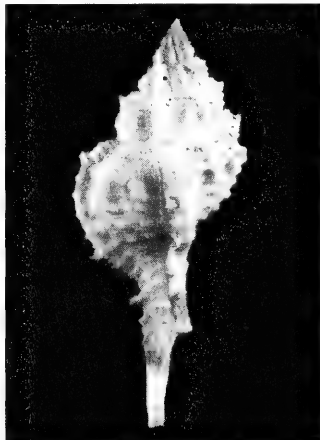
*Japanese abbreviation for the Osaka-Kobe district.

SPOTLIGHT ON CARIBBEAN MUREX

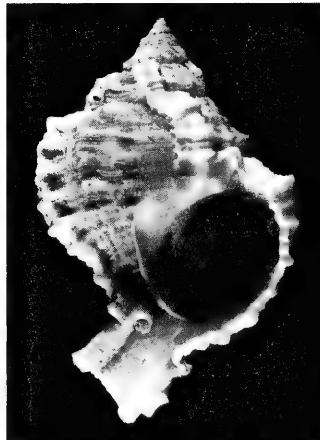
by Linda and Kevan Sunderland and John Chesler



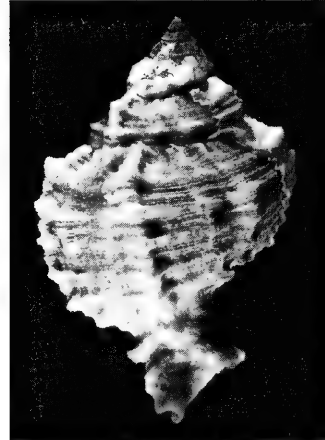
Chicoreus (Siratus) carolynae
E.H. Vokes, 1990. 44mm. 3',
muddy sand, Itaparica, Bahia,
Brazil.



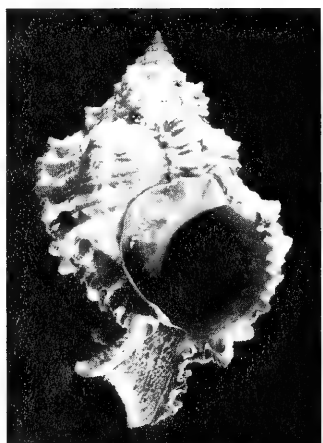
Chicoreus (Siratus) coltrorum
E.H. Vokes, 1990. 41mm. 3' in
muddy sand, Itaparica, Bahia,
Brazil.



Chicoreus (Phyllonotus)
globosus (Emmons, 1858).
76mm. 4', Amuay Bay,
Venezuela.



Chicoreus (Phyllonotus)
globosus



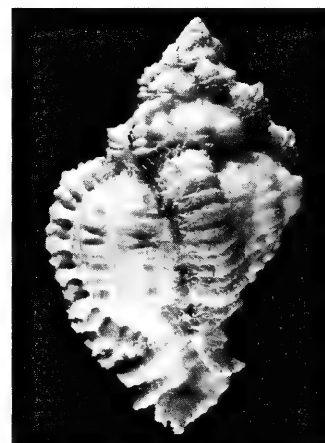
Chicoreus (Phyllonotus)
margaritensis Abbott, 1958.
97mm. 35m, Cabo La Vela,
Colombia.



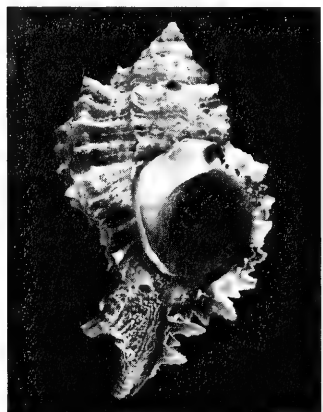
Chicoreus (Phyllonotus)
margaritensis



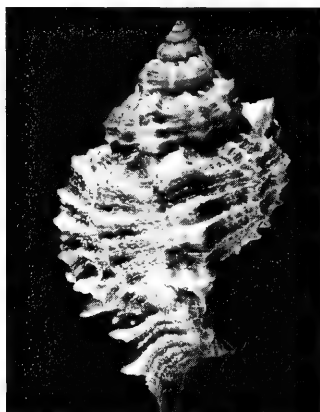
Chicoreus (Phyllonotus)
oculatus Reeve, 1845. 118mm.
80' in sand Plantation Key,
Florida.



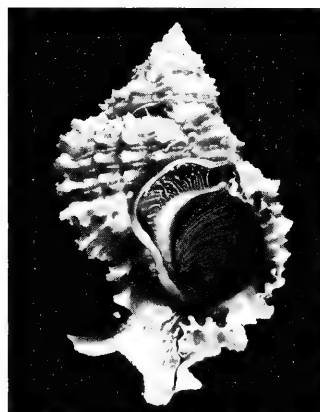
Chicoreus (Phyllonotus)
oculatus



Chicoreus (Phyllonotus)
pomum Gmelin, 1791. 85mm.
5', Governor's Harbor,
Eleuthera.



Chicoreus (Phyllonotus)
pomum



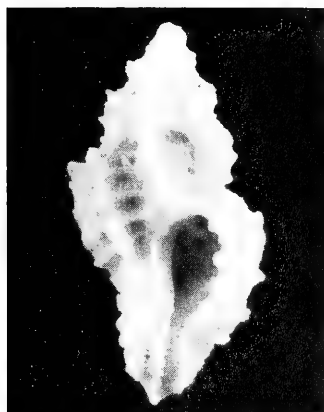
Chicoreus (Phyllonotus)
pomum mexicanus Petit, 1852.
89mm. 200', Key Largo,
Florida, lobster trap.



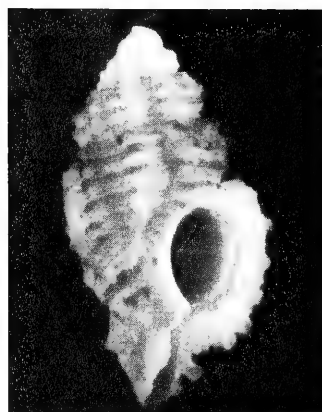
Chicoreus (Phyllonotus)
pomum mexicanus



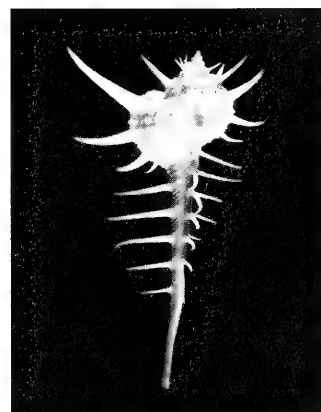
Dermomurex (Trialatella) oxum Petuch, 1979. 8mm. 20-25m, SCUBA Guarapari, E. S., Brazil.



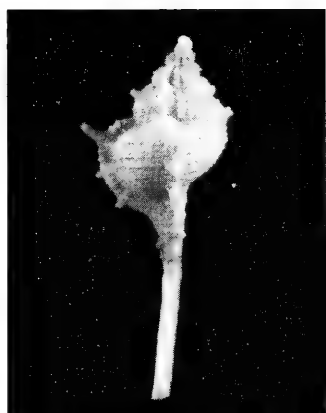
Favartia (Pygmaepterys) oxossi Petuch, 1979. 10mm. 20-25m, on bryozoan, Guarapari, Espirito Santo, Brazil.



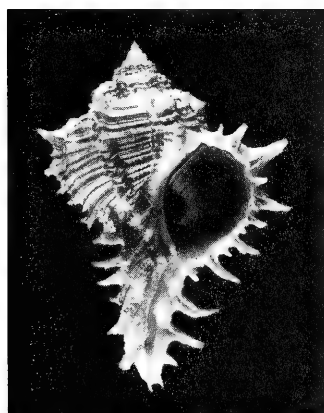
Favartia varimutabilis Houart, 1991. 8mm. 20-25m Guarapari, Espirito Santo, Brazil.



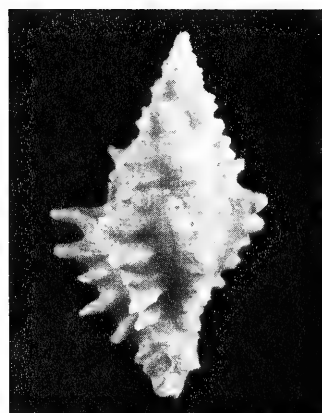
Haustellum c.f. *cabritii* Bernardi, 1859. 60mm. 60', Utila, Honduras.



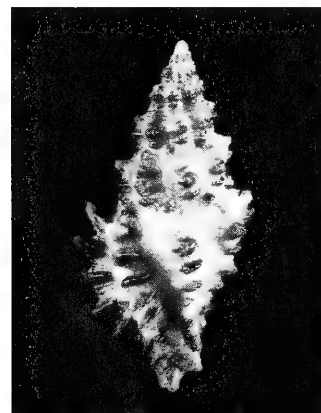
Haustellum sunderlandi Petuch, 1987. 40mm. 35m, Cabo La Vela, Colombia.



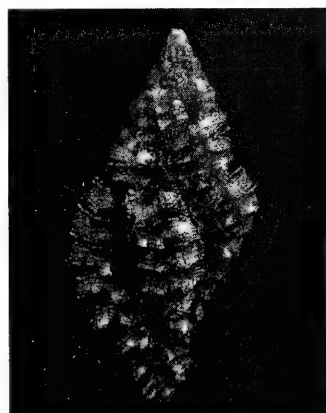
Hexaplex fulvescens Sowerby, 1934. 88mm. 10', Panama City, Florida.



Muricopsis josei E.H. Vokes, 1994. 24mm. 20-25m, rubble, Guarapari, Espirito Santo, Brazil.



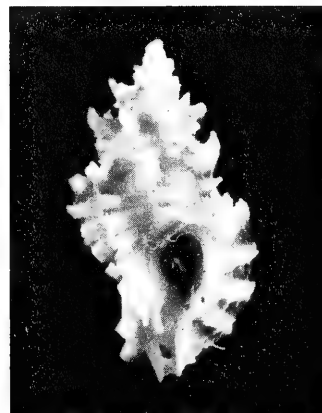
Muricopsis marcusii E.H. Vokes, 1994. 25mm. 5-6 m under rocks, S. Ilhabela Is., Sao Paulo, Brazil.



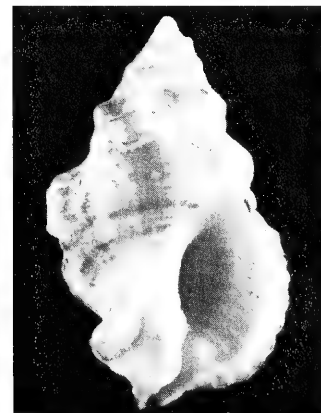
Muricopsis (Risomurex) necocheana (Pilsbry, 1900) 21mm. 4-5m, Ilhabela Is., Sao Paulo, Brazil



Murexsul species. 6mm. 20-25m, SCUBA, Guarapari, Espirito Santo, Brazil.



Poirieria (Pazinotus) bodarti Costa, 1993. 11mm. 20-25m on bryozoan, Guarapari, E.S., Brazil.



Attiliosa species. 22mm. 150' in lobster trap, Rosalind Bank, Honduras.

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ANTI-SHELLING LEGISLATION:

A Miscellany of Opinions and Ideas

There has been a tremendous response to our recent articles and editorials on the subject of anti-shelling legislation, both from within our organization and from without. This was certainly to be expected. Such legislation seems to strike at the heart of our interest, making the future of shell collecting uncertain. We wish for shelling to be as it always has been, and yet we know that day has already passed. The good old days — when exactly were they? In Linnaeus' time? Lamarck's? Or in the days of Henry Pilsbry or those of Bill Clench? Change is the nature of things.

But just how they will change is still, in part, up to us. Our experiences, our opinions, and our ideas, well and properly aired, can influence the outcome. The person who spends his free time collecting live shells is often in a position to know a great deal about the needs and well-being of a particular mollusc. If he is at

all observant, he has noted changes, usually decreases, in the availability of some species. And if he is at all honest with himself, he realizes that the time has come to see to the future and the safety of these animals. What species need conserving? What are good ways to implement needed conservation? What can we do? Who is making the decisions? What is influencing these decisions? There are more questions floating around than there are answers, just now.

There follow letters and articles written by a number of collectors and hobbyists expressing their views and their ideas. Read them. Ponder them. And by all means add to them, next issue, if you have some good ideas. We can only trust that someone is out there listening to us.

SHELL COLLECTORS — THIS AIN'T THE SUMMER OF LOVE

by G. Thomas Watters

It is becoming unfashionable to collect shells, or butterflies, or any living creatures. My paleontological friends even inform me that private fossil collecting is now frowned upon. Believe it or not, for the past couple of years it has been absolutely against the law to send shells to or receive shells from another country, even with all the Customs forms filled out and glued on the parcel, unless you have a special form from the US Fish and Wildlife Service. You see, this is all controlled by USFWS, not the Post Office, and USFWS had declared that the U.S. Postal Service did not constitute a legal port. This move was driven by conservation interests who perceived that the exchanging of shells, beetles, butterflies, mites, ants, and anything ever alive was anti-environmental. The law was hotly debated, mostly by museum personnel who realized that they would now spend the rest of their lives, and their children's lives, filling out USFWS forms. The final chapter on this story has yet to be written, so stay tuned. But that is the tip of the iceberg. As shell collectors, we are perceived as destroying the environment for the unconscionably selfish motive of making a pretty collection that we can secretly roll around in naked. . . or something like that. The reasons for these accusations are as numerous as those making the arguments.

To some professionals, a private collection is just that much less material available to study at, say, a major museum. This is part of a growing arrogance on the part of many "professionals," who seem to have forgotten that most "professionals" started out as amateurs, and that most "professional" collections have, as their nucleus, donated private collections. I have donated parts of my private collection to museums, even rarities with which I hated to part. Professionals have studied specimens in my collection (for free!). I'm sure many of you have done the same. When I go to that big COA convention in the sky, my collection will be deposited at a major museum. But that's not really the point. We can all think of some "professionals" who are not professional at all, and we all know of some "serious" amateurs who have forgotten more than some professionals will ever know. This has led to insolence on occasion, and the alienation of amateurs and professionals alike, as you are no doubt aware. I'm not sure what to do about this, and welcome any input.

On another level are the critics who decry the killing of living creatures for something as frivolous as collections. This goes beyond political correctness, that bastion of insipidness, and is a genuine and pressing concern. Ignoring it won't make it go away. These people care for the sanctity of life and their views have

merit. Life is something that should not be taken for granted, even if it's the life of a snail. After all, can any one of us bring our shells back to life, even the most common and humble species? We must answer these people as best we can. It doesn't matter if they are wearing a fur coat, alligator handbag, and snakeskin boots. We must be receptive to their feelings, but not become stuck in a philosophical quagmire that neither side can win. As with religion and politics, these are matters of personal belief, and we won't change anyone's mind.

But perhaps the most controversial, and powerful, arguments come from non-collecting conservationists. The question is simple — does our collecting endanger a species or community of species? It is here that the term "collector" takes on a grey meaning. We have all seen the mountains of *Strombus gigas* shells in the Keys and the Bahamas. Mountains not just of adults, but rollers as well. Conchs sprayed with DayGlo paint, impaled with a plastic crucifix, and fitted with 40 watt bulbs. Thousands of packages of "Florida Shells" containing guaranteed Philippine species. *Babylonia spirata* inevitably metamorphosed into unicorns, elephants, and a whole menagerie of bizarre animals. Beautiful *Charonia* juveniles with the spire knocked out and a plastic mouthpiece inserted for that authentic South Sea islander horn sound. It's enough to make anyone, not just conservationists, cringe. How can there be *anything* left out there to collect?

We, the specimen collectors, don't collect thousands of conchs. We did not bring the Queen Conch to the brink of extirpation in Florida. But someone did. And we are associated with them in the minds of many people. In short, the distinctions between conscientious private collectors and the collect-till-you-drop for-profit collectors is not made by conservationists. We need to stress this fact when we talk to our critics. After all, we too are conservationists.

But don't we all buy shells that someone else collected? Don't we patronize shell dealers to get those species we would never have otherwise? I know I do. But we have all heard stories of people destroying reefs to obtain shells, of people collecting every last specimen they can get their hands on. Does it really happen? Yes. But we know the vast majority of dealers are honest and scrupulous people. We hope and assume that they would never knowingly deal with such people, and that our specimens were not obtained by these methods. It would be nice if dealers included disclaimers in their lists stating that their sources do not collect in this manner. But can they ever be sure? Can we? Perhaps some response from our shell dealers in these pages could assuage these concerns.

Unfortunately, we know that commercial collecting for the



Factory workers standing on a mountain of freshwater mussels killed to make pearl buttons. St. Marys, West Virginia, circa 1911. Photo courtesy of Patricia Morrison, National Wildlife Refuge Ohio River Islands, USFWS, Parkersburg, WV.

"shell trade," which includes any and all uses of shells, from museum specimens to door stops, may endanger a species or community of species. Newton et al. (1993) gave convincing evidence that commercial collecting had severely reduced the populations of some commercial species in Tanzania. Other studies reached the same conclusion (Wells, 1981; Wells & Alcalá, 1987). Commercial collecting of freshwater mussels has twice before decimated their numbers, and the relatively new pearl industry is teetering on the brink of making it a triple play. On the other hand, other studies have reported no impacts from commercial collecting (Evans et al., 1977; McClanahan, 1989, 1990). Clearly the *potential* for harm exists from collecting. But generalizations are difficult to make. Collecting pressures differ from species to species and place to place, and some habitats are more precarious than others. Deep water *Odostomia* hardly experience the same collecting pressure as do *Liguus*. Furthermore, not all species occur at the same population levels, and what may be overcollecting to one species may be insignificant to another. Inevitably, we must collect responsibly if we wish the resource to continue.

Regrettably, we no longer have an ocean in Ohio, and I must limit my collections to freshwater and terrestrial taxa. Unlike most marine species, freshwater mollusks do not occur over vast areas of ocean, but live in precarious little lines — rivers and creeks. Most are surrounded on all sides by potential sources of destruction: pollution, runoff, etc. Many of these species have very narrow ranges. But do they have a range so small that they could be extirpated or driven to extinction by private collectors? State and federal agencies have fretted, postured, legislated, and wasted time and money over this issue. And the answer is yes. In a tiny creek in Ohio sits the white catpaw, an inch long mussel, presumably found nowhere else on earth. Could I or someone else collect it to extinction? Yes. Because that species has been so decimated that the taking of one or two individuals could push the species over the edge. Recent studies have shown that it is not necessary to collect every last one to extirpate a species. But (and this is what the agencies do not appreciate) species like this one *were not driven to this point by private collectors*, but by pollution, impoundments, commercial collecting, agricultural runoff, developmental runoff, industrial runoff, bridge construction, lampricides, dredging, filling, dewatering, removing fish hosts, and other reasons — causes that agencies *should* be devoting their time and resources to, and not spending it on private collectors. Is this the case at Sanibel? or in Australia? Are these regulations a "feel good fix" for the masses that misses the real mark?

As collectors, our knee jerk reaction to our detractors is one

of dismay. We didn't do this damage. Why are they picking on us? Because, like it or not, we are associated with those who are at fault. Our critics see no difference between our private collections and the mountains of Queen Conch at every mom-and-pop roadside stand from Tavernier to Key West. What can we do? Do we distance ourselves from the problem and ignore it? Certainly no one understands the problem more than we do — not some Park Ranger or Wildlife Officer or Washington bureaucrat who has no idea what a rostrate niger-form cowry is. We need to address our detractors and attempt to answer their questions. We need to calmly state our case. We need to be perceived as caring about the creatures we so cherish at least as much as the "real" conservationists. Make your voice heard. After all, even Newt was an armchair biologist before he went over to The Dark Side.

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A Letter From Emilio Power (addressed to Linda Koestel, COA President):

As COA President, you and the association must take a stand on the issue of shell collecting bans and regulations. It is time to act and stop appeasement of this regulatory movement.

I am very concerned about recent developments regarding the collecting bans and regulations being put into effect, specifically in Florida. For years, my particular specialty, *Liguus*, has been prohibited to collect or disturb. These state and federal regulations are aimed at a handful (literally) of collectors rather than the root cause of declining habitats due to development and aerial insect spraying.

COA is **not** a very small minority, as are *Liguus* collectors. The shell clubs in total are not a small minority. The shell dealers are not a small minority. COA should take the leadership and "Take a Stand."

It disturbs me that the COA Bulletin is editorializing and publishing articles against shell bans and regulations, yet COA accepts an invitation to convene at Sanibel. COA should take a stand by taking the convention and ensuing funds spent by COA and its members elsewhere. Why should we bring our hard earned US Dollars to a community which bans and regulates our interests? I realize that the invitation is extended by the Sanibel-Captiva club; however, this large club, being part of the community, should have taken **strong** initiatives to stop the local shell ban regulations. The club is so appeasing to the regulators that their recent Shell Show application has the applicant certify by signature that "I have not collected my shells illegally." What will they do next? Confiscate Sanibel molluscs right out of our unlocked cases?

Hopefully I have made my concerns understood, and as a member of COA I urge that you and the association take a firm public stand on the issue of shell bans and regulations by rejecting this invitation to convene in a community that does not share our interests.

4812 Union Cypress Place, West Melbourne, FL 32904

From Judy Hensley, COA member from Virginia:

As I write this letter, I realize most members will view it as heresy. As a professional marine ecologist and a life-long conservationist, I feel I must write it.

(Continued on next page)

ANTI-SHELLING LEGISLATION (Continued from page 19)

The last issue of *American Conchologist* (Dec.) addressed the issue of legislation re: live shell collecting, generally taking a stance against such legislation. Perspectives seem dangerously close to the arguments of big game hunters in the not so distant past. Those folks were primarily interested in **collecting** trophies that sat on shelves or hung from walls. Such mentality has taken its toll on living, reproducing organisms in their ecosystems.

Is the need shell collectors feel to "complete" their collections so different? During a COA convention, I was appalled to hear collectors make reference to a rare shell found living in its habitat, and because of its rarity was taken, rather than left to reproduce. The motivation was multi-fold: (1) to add a rare shell (as a trophy) to one's collection (2) the shell's current monetary value because of its rarity and (3) if the shell reproduced and a colony were discovered, the rare status would be diluted and its monetary value would go down. These sentiments were not isolated remarks, but rather a prevalent attitude among many collectors with whom I spoke; most often expressed in a tone and demeanor of "of course, I know you agree with me." There was also disdain among many for **dead**, beach-collected shells.

Of tremendous import also, are the population pressures on all ecosystems. As conservationists, conchologists are certainly responsive to environmental issues; however, we simply cannot ignore the impact of the masses. In the last *American Conchologist* under the "Flotsam and Jetsam" column, reference was made to a freshwater influx that killed most of the oysters in Apalachicola Bay. Such freshets are exacerbated by nonpoint runoff due to asphalt on roads and parking lots, housing developments, industrial parks, loss of submerged aquatic vegetation, etc.

The masses also take their toll in the form of habitat loss, massive toxic contamination of Earth's water, dangerous plastic pollution — the list goes on and on. For your consideration I ask: (1) why are there fewer shells on the beaches now than ever before, especially during peak tourist season, (2) why is the Bailey-Matthews Shell Museum Shop not going to sell shells and (3) can you really look around a bourse and believe that the collection pressure represented by the **thousands** of shells there, can continue unchecked without paying a very serious price?

Even though conchologists are not **necessarily** responsible for the laws being enacted to protect living shell stock, we should be very open to protection for what surely will become endangered if measures aren't taken now. We will all have to make personal choices — some may even be sacrificial — but I am willing to do so to ensure long-term success. I heartily concur with Gary Rosenberg's suggestion to keep a life list. This truly may be the wave of the future for all "collectors"; or at least until Earth's populations can learn restraint and restore sustaining ecosystems.

Without a doubt, there will be a hue and cry against my letter. Please let us keep open minds as we approach these very emotional issues regarding the molluscs we all treasure so much!

5141 Center Drive, Roanoke, VA 20418

From Marcus Coltro, COA Member, President of Conquiliologists do Brazil, and Brazilian Shell Dealer (Femorale):

Reading (Dec. 94) about "The Criminalizing of Shell Collecting" by Carl Cook increased my concerns about that matter. We must do something before it is too late. It is very good to know that somebody is working to keep our hobby alive.

We should convene all shell clubs around the world and try to work together to solve this problem. The first thing we should do is create a document explaining the importance of shell collecting by amateurs and show that we care about the future of the shell as much as do the "Environmental Organizations." We should also show that there are not so very many shell collectors, especially active ones. For instance, here in Brazil we have 150 million inhabitants and we have, maybe, 100 collectors, of whom only ten

or fifteen actually go out to collect live shells. Do you think we could do any harm to the shell environment here? Even in the United States, how many active collectors of live shells do you have? Maybe 500? I don't believe even that many.

We must show that we agree with the control of commercial shipments of tons of shells, and that we are much more concerned with devastation by pollution in some areas, forest fires, landfilling, and other means of massive destruction of the shells' habitats. But even in Europe, where they have collected shells for food for at least two or three thousand years, there is not a single species extinct.

We need to prove the importance of private shell collections by showing that some of these collections sooner or later turn up in a museum or institution. Land shells, in particular, are much easier to force into extinction; just to illustrate this, I saw in a private collection in Germany a specimen collected in the last century in Rio de Janeiro, downtown, where today there is not a single native tree.

By the way, I have seen many important collections in museums around the world, and I can say that we, shell collectors, care much more about our shells than any "professional"; for example, they never clean their shells. Yet, as we know, time and dirt and improper treatment destroy shells. . . .

We need to send this document that we produce to every environmental institution in every country in the world. We could suggest creation of a special license to collect shells, like a dive license or a fishing license, to be sold only to bona fide shell club members who follow a set of rules to avoid overcollecting, and we should list all the countries in the world that accept it. (It would make the lives of world travellers much easier.) And, since the USA has more shell collectors than any country in the world, all the information should be centralized there, maybe by the ISCA [International Scientific Collectors' Association] — or why not by COA?

We can't let our hobby die, and I think if we try to put all our ideas together we will still have private shell collections in the future...

Cx.P. 15259, Sao Paulo, SP, Brasil.

From Shell and Tell (Jan/Feb 1995), Newsletter of the Gulf Coast Shell Club*

Feds Flex Their Mussels

No, that is not a typo. As you have probably heard or read about in the local paper, the U.S. Fish and Wildlife Service is proposing that five local mussels be placed on the Endangered Species List and two more be listed as threatened. These species, all non-marine, are indigenous to the Chattahoochee, Flint, and Apalachicola (CFA) river basin. There are approximately 297 species of fresh water mussels found in the United States and Canada, of which 60 are found in the CFA basin. Over 70% of the entire taxa is considered either endangered or threatened. Various journals, including *American Conchologist*, have long reported on the decline of mussels in the nation's waterways, but this is the first direct indication that local rivers and streams are similarly impaired. Fish and Wildlife checked 300 historic mussel survey sites and found that the seven species were found at less than 25% of the locations where they once lived. This suggests that the ranges of the mussels have been reduced by as much as 75% in some cases.

The specific shells involved are the *Amblema neislerii* (Fat threeridge), *Lampsilis subangulata* (Shiny-rayed pocketbook), *Medionidus penicillatus* (Gulf moccasinshell), *Medionidus simpsonianus* (Ochlocknee moccasin shell), and *Pleurobema pyriforme* (Oval pigtoe) as endangered and *Elliptiodon sloatianus* (Purple bankclimber) and *Elliptio chipolaensis* (Chipola slabshell) as threatened. Once placed on the Endangered Species List it would be illegal to collect these species without special permitting from the Fish and Wildlife Service. Even accidental collection (which is not hard, as several of these species are quite similar to others found in the area) can result in fines and the confiscation of property.

Public hearings on the proposed listings were held at Chipola Junior College in Marianna, Florida on 9 and 24 January. Representatives from the Gulf Coast Shell Club attended the

*presumably by Jim and Linda Brunner, Editors

second of these meetings and entered the following statement in the official record on behalf of the club's membership:

I am here representing the Gulf Coast Shell Club and, by extension, the national organization of collectors known as the Conchologists of America.

Our organization has no objection to the provision of protection to these species if such protection is truly warranted. Our concern instead lies with the manner in which the listing process tends to limit the resources available in the study of these and other species. Professional malacologists are few and far between and usually are faced with far more tasks than they can hope to complete. They certainly can't do detailed field work on a continuing basis. While most of the scientific data is developed by these professionals, the vast bulk of the current filed data resides with the amateur collectors. Frequently this allows the amateur to place the professionals at exactly the right spot at exactly the right time to observe the behavior they wish to see, thus saving them time and expense. My organization has carried out several of these projects, as have other shell clubs around the nation.

The request that we would make is that the structuring of any regulation be done in such a manner as not to exclude the bona fide amateur collector from gathering field data and pursuing scientific study. The role of the amateur in malacology is often underrated but nevertheless significant. As example I note that all of the pictured species shown in your brochure, **Conservation Status of Freshwater Mussels of the United States and Canada** are from private collections. Thank you for your time and attention.

Perhaps the most disturbing aspect of this meeting was the manner in which the battle lines were so clearly drawn. On one side were the various governmental agencies such as the US Fish and Wildlife Service, Florida Department of Natural Resources, etc. On the other were the various specialized interests such as barge companies, timber corporations, and an organization known as the Tri-States Mussel Coalition. While no direct argument took place, the various statements read into the record were hardly complimentary to the opposing side. There seemed to be no middle ground — no place for the Gulf Coast Shell Club to position itself. Yet such a position is needed if we are to practice our hobby unfettered. To start with, the shelling community needs to have a definition as to what distinguishes an amateur collector from a commercial collector. It would seem logical that such a distinction would lie with the monetary value received from collecting and what role this money plays in the livelihood of the collector. Thus a person who collects a few (or more than a few) shells for personal use or for trading would be exempt while someone who collects to make a substantial portion of his income would be commercial. Once this distinction is drawn then all shellers must present it forcefully at all available forums. Unless we make our voice heard we soon will have no hobby to protect.

P.O. Box 8188, Southport, FL 32409

From Albert Bridell, Sanibel Resident:

I am a resident of Sanibel who has been an active and vocal opponent of the Live Shell Collecting Ban on Sanibel. The Ban seems to have a political base rather than an ecological base. Sanibel has a history and the political momentum of living as a community exemplifying conservation. Sanibel has to be complimented for substantially achieving and maintaining this goal. However, there is always debate and disagreement among us conservationists about the need, the extent, and the reasonableness of each proposed program. Debate? Yes, our City Council holds public hearings and discussion, and we all debate our five minutes worth. . . [and] the "No Live Shelling on Sanibel" ban became effective on January 1, 1995. The City of Sanibel is . . . the island plus 1/2 mile of the surrounding waters.

WHAT IS HAPPENING? . . . I see no difference . . . as many people walk, sun, and shell the beach as ever. It has been the best shelling winter of the past few years. I hear no local complaints or grouching. I see many people throwing shells into the Gulf and many people walking with well-filled bags. What is in the bags? I don't know. For some years there has been a "two live shells per species per trip" ban. Many people avoided the

chore of cleaning shells when they could usually find good fresh cleaned shells on the beach.

Persons interested in collecting specimen quality shells hire a shelling/fishing guide. They are taken to remote and productive locations. They go where the shells are. After all, isn't that what serious fishermen do? The program makes sense because only about 25% of the species live near the sandy beaches. . . . Scuba and snorkeling at nearby areas are also available options.

The police are not patrolling the beaches for shelling offenders . . . interested preservationists . . . on the beach, tell vacationers of the ban, usually politely. Interestingly, some of these very preservationists have "Permits to collect live shells" issued to them by the City, for educational or scientific purposes!!

All seems well and quiet on Sanibel. We seem to have more vacationers than ever this year. Activity on the beach seems very normal. Come and visit Sanibel as usual. . . .

2265 Gulf Drive #240, Sanibel, FL 33957-6122

A Tale of Sioux, Suits, and Sue

Hey, you fossilers, listen up! You're far from exempt! The current trend toward government regulation of everything that can be construed, however loosely, as a natural resource includes fossil evidence of past life. Remember that issue about the legality of commercial collectors taking fossils from public lands? Donald Dan sent us information (**New York Times** March 17, 1995, page A8) bringing us up to date on that question.

Here's what's happened: A group of commercial excavators and dealers in valuable fossils, the Black Hills Institute of Geological Research of Hill City, South Dakota discovered and excavated the most complete *Tyrannosaurus rex* skeleton ever on land belonging to Maurice Williams. Williams accepted \$5,000 from the institute for the privilege of excavating and removing the fossil. They then spent \$212,000 excavating the fossil, nicknamed "Sue," and preparing her for public exhibition in their Hill City museum. They announced that Sue would always be available for study by scientists.

At which point, a few paleontologists raised the issue of whether private individuals should be allowed to take natural history items, in this case, valuable fossil remains, from public lands. They said the excavation of Sue constituted pilfering and that such pilfering deprived scientists of the opportunity to study fossils obtained in such a way. But, you say, they paid Mr. Williams for the permission to excavate. Ah, but it seems that Mr. Williams is a Sioux Indian and his property is held in trust by the Federal Government in exchange for the tax relief extended to the Indian reservation land. So the U.S. Attorney's office charged that the Black Hills group stole the fossil and sent in the FBI and the National Guard to raid the museum, confiscate the *Tyrannosaurus* skeleton and other Black Hills fossils and documents. They brought 149 felony charges against the dinosaur hunters and spent between \$5 million and \$7 million prosecuting them. Pretty scary, you think? And this was in spite of the fact that most other paleontologists disagreed with this conclusion.

But the jury acquitted the defendants of most of the charges, finding them guilty only of eight charges of irregularities in customs declarations of travelers checks and fossil values, charges that will be appealed. Ah, sigh of relief. All's well that ends well? Not so! The three week trial cost the five defendants about \$1 million, the appeal is yet to come, and Federal courts have since ruled that Sue belongs to Mr. Williams, who may sell her if he wishes to the highest bidder! (The dinosaur hunters have filed a lien against Mr. Williams.) And Peter L. Larson, president of the Black Hills Institute, and one of the defendants, noted, "If I had been convicted on the main felony charges, I could have faced 353 years in jail, which seems unfair, considering that Jeffrey Dahmer, the serial killer, was sentenced to only 258 years."

Postscript: The latest on this front is that the judge and prosecution want to retry the defendants on some of the charges they were not found guilty of, but the jury is outraged.

(Continued on next page)

ANTI-SHELLING LEGISLATION (Continued from page 21)

Japh's Pretty Good Exposition of Crisis and Conflict in Paleontology

by Japeth Boyce*

*The following is excerpted from the Introduction to Japeth Boyce's 1991 fossil guide, **Japh's Pretty Good Fossil Book of the Dakota Territory**. It appears here because it has bearing on the current concerns of natural history enthusiasts everywhere. The vertebrate fossil collectors are much more beleaguered than invertebrate fossil collectors, or than shell collectors, but it will profit us to be aware of what is already going on in other branches of the study of natural history. What happened there could happen here as easily.*

Regrettably, much of the conflict in the fossil realm is between the amateur and some of the professionals, with the government siding against the amateurs. In the shell world, for the most part, such is not the case. Most malacologists, both in the geological and the biological fields, are tolerant of amateurs. Many are extremely cooperative, as a matter of fact, and our lines are drawn differently, so that usually the collector and the scientist are allies.

When I first came up with the idea to write **Japh's Pretty Good Fossil Book of the Dakota Territory**, all that I had in mind was something larger than a pamphlet but smaller than a breadbox, which could be used like an oversized business card: "Hi, I, Japh Boyce, here's-my-book-wanna-buy-some-fossils?" Or something along those lines. . . . Somewhere on the way to print, the concept became stretched, and . . . along with the expanded purpose of the book came some added responsibilities. For instance, it occurred to me that telling people all about how neat fossils are, when they lived, what they looked like, what they ate and what ate them was terrific, as long as no one got the idea that he was free to go and collect fossils wherever he felt like it. In, fact, if things continue proceeding along current, scary lines of thought and legislation, no one will be able to collect *any* fossils, anywhere.

This is already the case in Canada. In fact, in Canada, it is *retroactive*. If you have any fossils, even some collected over a decade ago, they can be confiscated by the government! Furthermore, not only can they be confiscated in Canada, they can be confiscated in Germany or Florida or Tanzania or where ever in the world they happen to be at the moment. If those fossils came from Canada, Canada wants them back.

As a fossil collector and dealer, I find this somewhere between alarming and insane. They aren't talking about collecting on preserves or in parks, they're talking about collecting *anywhere in Canada*. That isn't even the worst news. The worse news is that there are segments of the American scientific community that want to pass similar, national legislation here. Steps are already being taken in this direction. For instance, in both North and South Dakota, a "buffer zone" has been declared around the *outside* of park perimeters, expanding the areas off-limits to fossil collectors. This buffer zone is ill-defined, both geographically and conceptually. No one seems exactly sure where it is or just what it's supposed to do, but whatever it's for and whatever it is, it's sure as heck illegal to collect fossils there.

So instead of being collected and available for study or for esthetics, the fossils are left to the elements. And to what ends? Unlike other aspects of nature which occasionally correct the mistakes of man, fossils are not improved if left to their own devices. By outlawing the collection of fossils on public land, we are *not* saving the fossils for the public. We are saving them for the wind.

Perhaps a great deal of the problem rises from the quaint notion that if just left alone, nature will nurture and protect her creation. Fish will swim, birds will fly, fossils will endure and

the grand cycle of life will go on undisturbed forever, if only we leave it be. Or at least leave it to the scientists to manage properly. Unfortunately, it's a big country, and there are a *lot* of fossils out there, and not nearly enough scientists to go around. In fact, due to some odd jinxes in educational and economic trends and career planning on high school and college campuses, soon there won't be enough scientists to do much of anything, let alone something as esoteric as study *really* dead animals. (Ironically, it is the paleontologists who are in danger of extinction: as of this writing, *not one* university in the country offers an undergraduate degree in paleontology.)

No one is suggesting that people be allowed to rip wholesale into established digs or ransack national parks. Just that the few paleontologists in this country are unable to collect all the fossils, and wouldn't even if they could. Paleontologists make their livings primarily as teachers or curators, and their fame and fortune lies in publishing the discovery and description of new species. The vast majority of fossil remains in the field, however, are old species; that is those already well-known to science and well-described in the literature. These are specimens which most paleontologists would leave behind on the ground in the rain and sun to be lost forever, while rarer, more important things were excavated and preserved. Thus to collect, restore, keep or sell these numerous common fossils is not a reprehensible act, but a responsible one.

Many paleontologists fear that amateur fossil collectors will ruin important specimens, through inexperience or incompetence. This is certainly an understandable concern. The frustration and disappointment felt by a professional collector after encountering the headless remains of what may once have been an important fossil, but because of careless or unethical collecting, is now a collection of useless old bones, is understandable. However, had no one encountered the fossil in the first place, it would be equally lost to the world.

In any case, the majority of amateur fossil collectors are careful, responsible and thorough in their collecting techniques, and many take great pains to share important finds with interested individuals, schools and research institutions. But even if they didn't, the fact remains that if all however-many-thousands of rock hounds and fossil collectors in the country went out and pounded every fossil in sight into powder one day, they couldn't hope to equal the devastation wreaked by a few hard freezes and a couple of good gully-washers. **Fossils left alone are not fossils preserved; fossils preserved are fossils preserved.** . . .

What is needed here is some old-fashioned cooperation and collaboration, not more restrictions and growing "no fossil collecting" zones around parks. Amateurs should join clubs and national organizations to learn more about the technical and ethical aspects of their hobby. Professionals should lecture to these clubs, and otherwise disseminate information about proper collecting techniques and collecting etiquette. By deputizing instead of despising amateurs, paleontologists can extend their reach and obtain far more and better-collected specimens.

In addition to being reminded to work together, we need occasionally to be reminded that, contrary to popular sentiment, nature is not always a caring, loving mother. Remove the anthropomorphism, and nature is simply an emotionless force, whose "disinterest" allowed these animals to become extinct in the first place. Man has been given a priceless opportunity to save them from a second, more terrible extinction. If we fail in this task, through greed or elitism or plain shortsightedness, there won't be a third chance. Our children will not view our efforts to save their future as noble if, in the process, we allow their past to be irrevocably destroyed. . . .

4350 Cliff Drive, Rapid City, SD 577020

See also the Fossil Literature column for a review of **Japh's Pretty Good Fossil Book**.

NOTES FOR MEMBERS

by *Bobbie Houchin, COA Membership Director*

Many thanks go to the members for renewing for 1995. If you know of anyone who has not paid 1995 membership dues, please urge them to do so. Sure hate to see them miss receiving the **AMERICAN CONCHOLOGIST** and the 1995 COA Convention information.

If you are not receiving your **AMERICAN CONCHOLOGIST** in a timely manner, it could mean:

1. Bulk Mail can be the last mail your mailman delivers to you. Since the **AMERICAN CONCHOLOGIST** is sent by Bulk Mail, allow about a month's time before notifying us that you have not received your issue. The quarterly issues based on a calendar year are normally mailed by the 10th of March, June, September and December.
2. Your change of address was not received in time for the Bulk Mail mailing date. This includes you "snowbirds" who have not let us know your two addresses and what time of year you will be at which address. **REMEMBER: BULK MAIL IS NOT FORWARDED.** Many of you are aware of this — that is just great for all involved in this mailing process — you the recipient, and we the processors.

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OR

Bobbie Houchin, Membership Director
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3. There is an error in your address. We check and recheck your addresses, but errors do turn up. Some members have sent wrong addresses (transposed numbers, wrong zip codes). We do our best to try to straighten things out.

Please let me know if you are having a membership problem and I will try to take care of it.

As Membership Director I appreciate the support and cooperation you give by paying your dues, recruiting new members, passing on a good word about COA, sharing your **AMERICAN CONCHOLOGIST** (as well as your own shell info) with non-members, and in other ways. **WONDERFUL!**

HOPE TO SEE MANY OF YOU IN SAN DIEGO!

IT'S A GIRL!

Baby Goldberg arrived ahead of schedule on May 9, weighing in at 8 lbs. 9 oz. Rich and Meg are delighted with their new daughter and have named her Hallie Nicole Mattison Goldberg. "Hallie," Rich says, means "gift from the sea," but they didn't learn its meaning until they'd already named her. Congratulations, Meg and Rich! We can't wait to meet her in San Diego!



OOPS:

THE GREAT HORSE CONCH MYSTERY

After Nancy Gilfillan's column on the Astronaut Trail Shell Club appeared in the March issue of **American Conchologist**, we learned that there is more to the story of Florida's adoption of the Horse Conch as State Shell than we originally thought. Palm Beach County Shell Club was also heavily involved, and other clubs around the state may also have been dedicated workers for the cause. With whom did the idea originate? Who actually introduced the bill? What clubs were involved? Who were the chief workers? Surely this was the greatest cooperative effort in the history of the State Shell movement nationwide. The story deserves to be told in its entirety.

So if you have information, or your club has a tradition of involvement in the State Shell Campaign in Florida, please let us know. Send copies of any documentation your club may have. Give us names if you remember, clues if you have them. We need your help to preserve this piece of history entire. All communications should be directed to The Editor.

ADVERTISING ANNOUNCEMENT:

American Conchologist now accepts a supplementary advertising: single sheets or 8 1/2 x 11" folios inserted loose in the magazine. No more than two of these inserts may be accepted for any issue, first come, first served. Interested prospective advertisers may inquire for prices and requirements by contacting the Editor's office, Phone: 502-228-8741 (after 4:00 p.m. EST); Fax: 502-426-4336; or by mail, 1222 Holsworth Lane, Louisville, KY 40222.

LETTER TO THE EDITOR:

Is there any way we can stop collectors from being ripped off by those who advertise for exchanges and then do not reciprocate with a return parcel? I have sent parcels to a guy in Malta, one in Poland, one in Boksburg, South Africa, one in Capetown, South Africa, and a guy in Puerto Rico. You cannot tell me that all these parcels have gone astray. All these names were advertised in our South African magazine, **Strandloper**. I think that editors of every shell magazine in the world should be given the names and addresses of these defaulters so that their names are not placed in magazines for exchanges. Someone has to send a parcel first, and who is to choose who it shall be? Perhaps someone out there has an answer. I would be happy to hear of it.

Olive Peel

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1995-96 COA SLATE OF OFFICERS

The following slate will be presented for election at the convention in San Diego:

President: **Linda Koestel**
Vice-President: **Dave Green**
Secretary: **Linda Brunner**
Treasurer: **Walter Sage**
Trustee: **Jean Roe**

Members of the Board of Directors will be appointed by the President following the election and approved by the newly elected Executive Board.

THE NEW FLORIDA MUSEUM OF NATURAL HISTORY

by Harry G. Lee

The sun made its first full appearance at 11:30 just as University of Florida President John Lombardi initiated a modern-day ceremonial mound building. The ceremony was the "ground-breaking" (more aptly, "-moving") for the new Florida Museum of Natural History, which will soon stand atop a much larger mass of earth at the same site. The April 28th event marked the culmination of a seven-year campaign to build an education and exhibit center (some call it an "outer museum") for the largest institution of its kind in the southeast. Completion is expected well before the end of 1995.



Curator of Malacology, Fred G. Thompson, on the edge of his seat during proceedings.

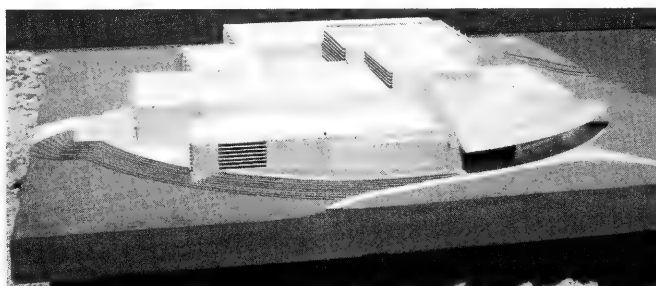
The exhibit areas will more than quadruple the present public access museum located in juxtaposition with the research collections about two miles to the northeast, in the center of the University of Florida campus. At the new location the museum will be sited between the Harn Museum of Art and the Center for the Performing Arts, both of which have been operational for a few years. The scientifically-inclined may regard this third edifice as the "crown jewel" of a cultural complex probably unique for a university campus. It is located five minutes off Interstate Highway 75 and will certainly be a major destination for Florida and out-of-state travelers.

Malacology will be a major player in this new "outer museum." The "inner museum," where research collections are housed, can count some 300,000 lots of molluscs, almost all computer catalogued, which fact ranks it about sixth among such collections in the New World. More impressively, the malacology collection has grown ten-fold in the last two decades — absorbing such scientific assets as the McGinty, Beal-Maltbie, Alabama Geological Survey, Germaine Warmke, Joanne Lightfoot, and June Dawley collections. Dr. Peter Bennett, Florida Museum of Natural History Director, intends to give shells an ample share of the new exhibit space, where Florida's natural and archaeological history will be emphasized.

Curator Dr. Fred Thompson (malacology) and Dr. Doug Jones (invertebrate paleontology) and their respective collection managers, Kurt Auffenberg and Roger Portell, attended the ground-moving and assured the writer they were already

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L. to R., front row: Director Peter Bennett, Ann Powell, husband Bob, Steve Powell, University of Florida President John Lombardi view museum model atop mound they just created with ceremonial shovelfuls of earth.



Model of the Robert and Steven Powell Education and Exhibit Center of the Florida Museum of Natural History.

involved in exhibit planning. Dr. R. Tucker Abbott, Director of the Bailey-Matthews Shell Museum in Sanibel has laid the groundwork for a mutually beneficial interaction between the two institutions and their scientific staffs.

It was through the generosity of Steve and Bob Powell of Ft. Lauderdale that this dream achieved reality. The State of Florida, the National Endowment for the Humanities, and hundreds of other donors cooperated to marshal the bricks and mortar. Funding for some exhibits is still incomplete, but the tide has run strongly behind the Powells' leadership. The Museum welcomes input, in many senses of the word, from the conchological community and looks ahead to serving it and other inquiring minds as it promotes the presentation and appreciation of Florida's rich and unusual environment and heritage. For further information call Darlene Novak at (904) 392-9452.

WHAT IS IT?

This little *Aspella* species, taken at 50' under rocks at a sewage outfall, Hollywood, Florida, was submitted by John Chesler of Fort Lauderdale, Florida. Drop us a note if you recognize it.

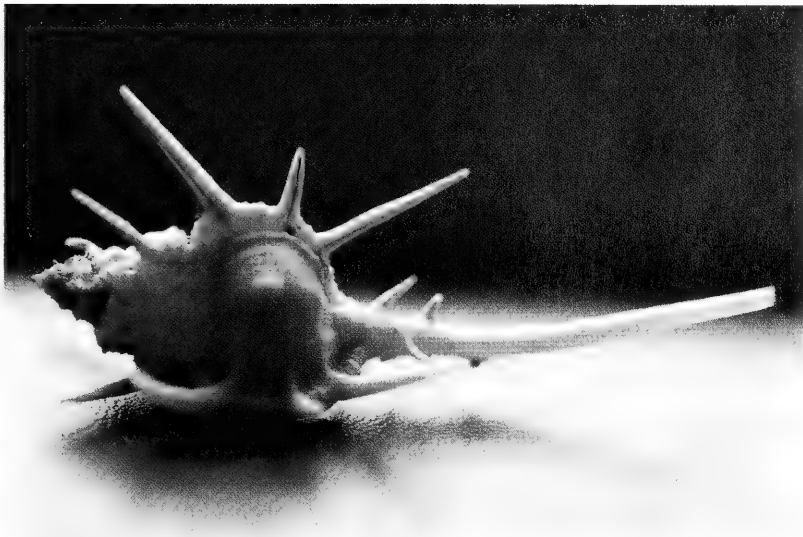
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MUREX (PROMUREX) ANTELMEI VIADER, 1938

Murex antelmei is the only Recent species in the subgenus *Promurex* E.H. Vokes, 1988. It is indeed a rare murex, as only two specimens are known, both from the shark-infested waters off Mauritius, one from off Port Louis Harbour in 60 fathoms, the other from 274-311 meters, Arsenal Bay, Mauritius. Since there is a shelling ban in effect, others aren't likely to be taken. Both specimens are in the Mauritius Institute. Thanks to Gene Everson who, through a friend provided us with this intriguing photo of one of the specimens.

Flotsam and Jetsam

The October/November/December issue of **XENOPHORA**, Bulletin of the French Conchological Society, No. 68, carries a well-illustrated article on the Deep Water Molluscs of the French Antilles, by Gérard Paulmier. Seventy-nine species are discussed and illustrated. This issue of **Xenophora** will be useful for any student of Caribbean molluscs.

Word has it that **THE NEW BAILEY-MATTHEWS SHELL MUSEUM** on Sanibel has a project in the works: a Sanibel-theme address book with photos of Sanibel shells by Pete Carmichael, Bob Lipe and Tucker Abbott. Slated to appear some time early this winter, the address books will be sold both in the museum store and by mail order and will probably retail for under \$10.

REMEMBER THAT 1978 COA GROUP PORTRAIT in the December issue? We spotted some familiar faces. Mel Springer kindly added to our list. Perhaps you too can help us by recognizing some of the people in this picture for our COA history. Lucille Green, COA Historian, has a lot more pictures like this one. When you're in San Diego, look her up...she'll have her COA History scrapbooks and photo albums. See if you can put some names to some faces.

**Musings of an Itinerant Malacologist 2**
***Charilda morisyuichiroi* (Habe, 1968)**
by Don Shasky

This is a response to Thora Whitehead and Hiroshi Munekata (March, 1995, p. 15) regarding *Subeulima morisyuichiroi* (Habe, 1968). It would be very easy to confuse *Bacula lamberti* (Souverbie, 1875) with *Charilda morisyuichiroi* unless both were examined very carefully. In Warén's reference to *Bacula* he states the following:

Charilda Iredale, 1929 (Pyramidellidae) resembles *Bacula* but has a wide umbilicus and typical pyramidellid larval shell of 3 whorls (larval shell of *Bacula* not known). I have examined the type of *Subeulima morisyuichiroi* Habe, 1968 and it should be referred to *Charilda*.

4490 Nighthawk Way, Oceanside, CA 92056-5441

REFERENCES

- Shasky, D. 1995. Musings of an Itinerant Malacologist. *American Conchologist*, 23(1): 13-14.
Warén, A. 1983. A generic revision of the family Eulimidae (Gastropoda: Prosobranchia). *Jour. Moll. Studies. Suppl.* 13. pp. 1-96, 230 figs.

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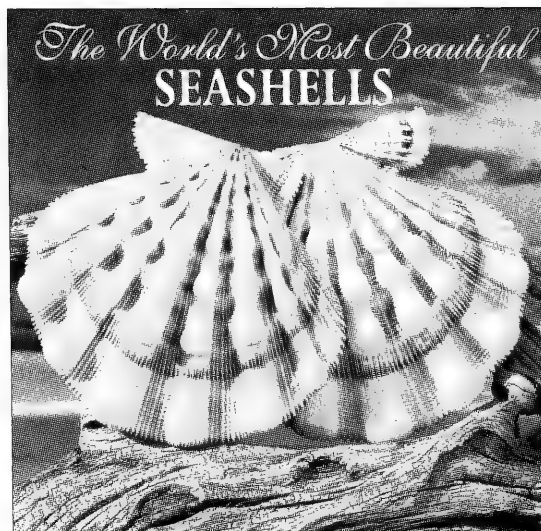
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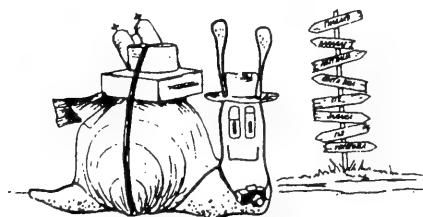
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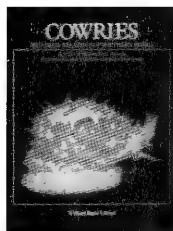
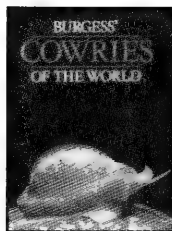


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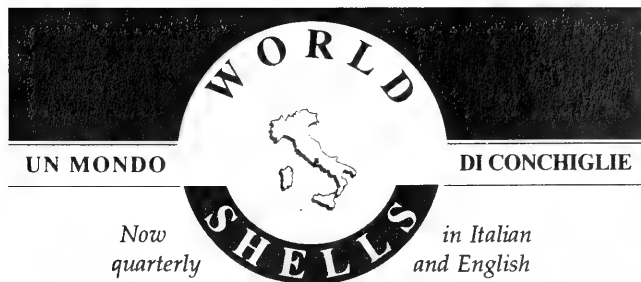
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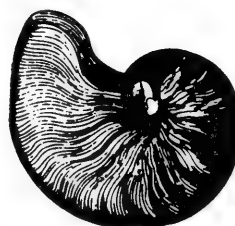


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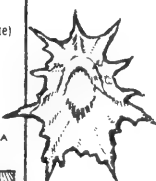
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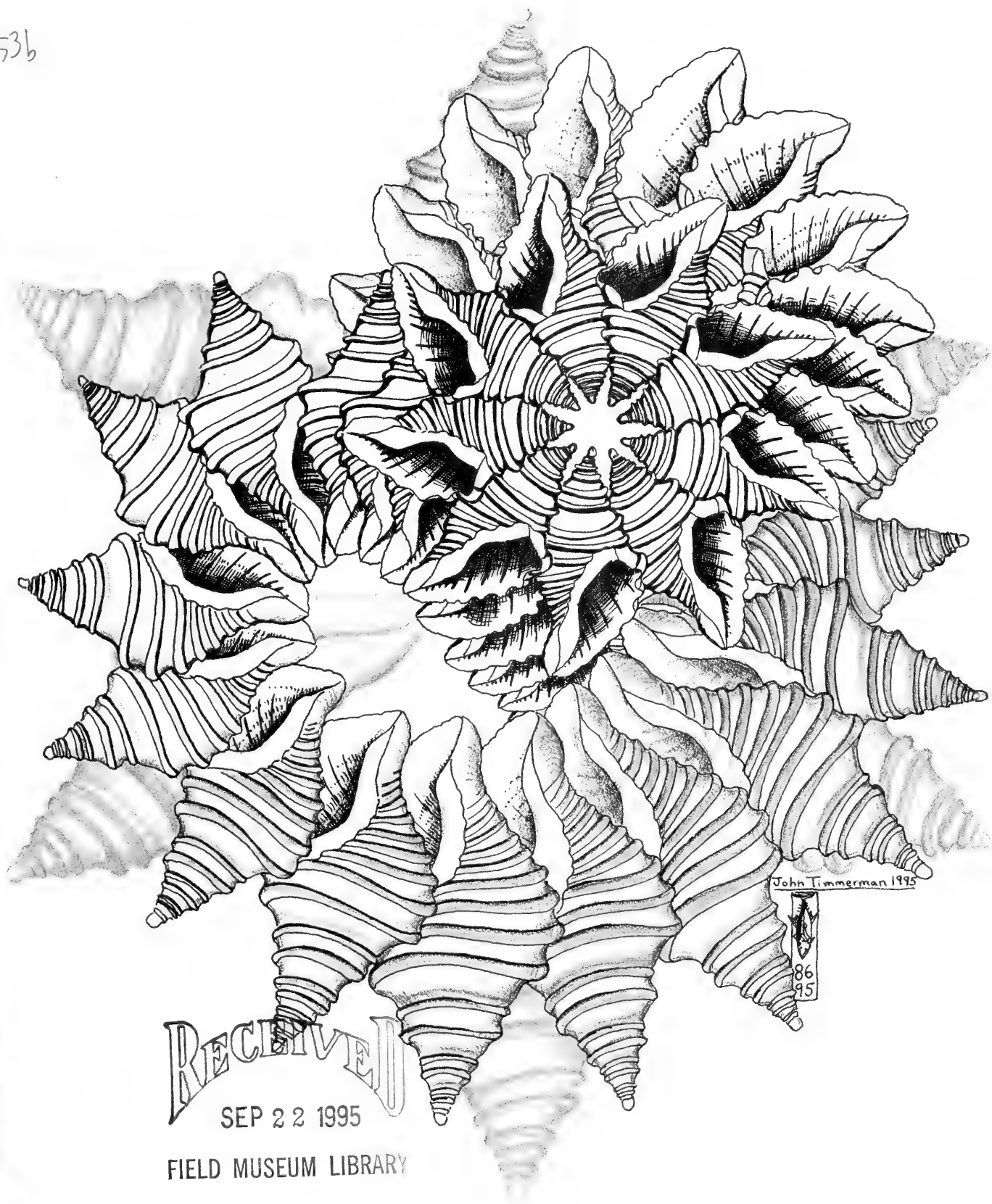
The Latin name of this snail, *Calliostoma annulatum*, means "most beautiful ringed mouth." Its common name is "Purple-ringed Top Shell." This top shell is found in rocky habitats, often in kelp beds. Its maximum height is about 30mm. It was photographed on kelp near San Miguel Island, California in 50 feet of water by Dave Nesheim.



REGAL POSE

Simnia vidleri, commonly known as Vidler's Simnia, is found on variously colored gorgonians which are usually in kelp beds on rocky reefs. Its maximum length is about 22mm. It was photographed on a red gorgonian near Santa Cruz Island in 40 feet of water by Dave Nesheim.

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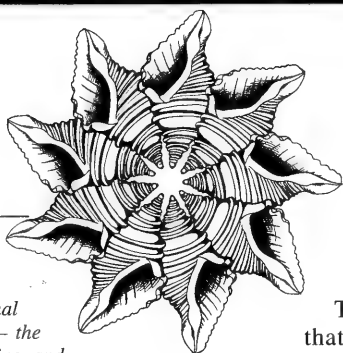
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QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 23, NO. 3

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CONCHOLOGISTS



OF AMERICA, INC.

VOL. 23, NO. 3, SEPTEMBER 1995

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

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PRESIDENT'S MESSAGE

This is perhaps the most difficult President's Message that I will ever have to write. In it I will be saying goodbye to a friend. I only knew Walter Sage for six years. In that time we became very good friends. We saw each other at COA conventions and the Shellers' Jamboree. I visited with him in New Jersey and he with me in Florida. He would do just about anything for you short of giving you the shell shirt off his back. Ask him nicely enough and he might do that for you too. I do not know that COA has ever had a harder worker or better ambassador for our organization. I hope you are at peace, Walter. We will miss you, friend.

Again we had a wonderful convention in San Diego. It is such a pleasant city, even with the June gloom. I want to thank Don Pisor Co-chairperson and members of the San Diego Shell Club for a fine job. A special thank-you to Kim Hutsell, Co-chairperson, and his wife, Linda. Their contributions to this convention were above and beyond the call of duty. We had interesting speakers and programs, many of them unique to the west coast. I want to thank the members of COA for the lighthouse presented to me at the Annual Meeting. Richard Scheu made it and it is wonderful. Since I did not see sawdust on anyone else, I know where the real thanks goes.

As you already know, our 1996 convention will be in St. Pete Beach, Florida. The St. Petersburg Shell Club is already hard at work planning that convention. I cannot wait to go on the field trips I've heard about.

I am pleased to announce that the board of Directors has accepted the invitation of the Sanibel-Captiva Shell Club to hold our 1997 convention in Captiva, Florida.

A committee has been formed to work on the issues of government regulations and bans on shell collecting.

Bunnie Cook of Honolulu, Hawaii is chairing the 1996 Nominating Committee. She will be working with Barbara Elliott of Punta Gorda, Florida and Travis Payne of Decatur, Alabama. If you have any suggestions for officers or want to volunteer yourself, please contact one of them.

LINDA

The family of Walter Sage wishes to thank the many members of Conchologists of America for their outpouring of friendship and sympathy. The cards and letters from you made this difficult time a little easier, just knowing that so many others shared our grief.

GLEN DEUEL IS NEW COA AD MANAGER

Glen Deuel is the new Advertising Manager for the AMERICAN CONCHOLOGIST. All reservations for ad space or ad inserts, all advertising payments and all advertising correspondence except for that directly concerning advertising copy should go directly to Glen at 8011 Camille Drive S.E., Huntsville, AL 35802. Checks should be made payable to Conchologists of America.

COVER: John Timmerman (32 JEB Stuart Drive, Wilmington, NC, 28412-1700), Art Director of *American Conchologist*, is featured on this, his seventh cover since 1987. His design for a new logo for COA (see top of page) won the competition at the San Diego convention in June. This cover is John's interpretation of the birth of the new logo, which incorporates the historic COA emblem, *Neptunea decemcostata*, common to both coasts of the U.S., and so representative of this coast-to-coast organization. The cover is another of John's Escheresque explorations of pattern, line and *trompe-l'oeil*. Superimposed on the pastel wheel of neptunes is the new logo, upper right. More than just a circle of shells, the logo is mesmeric — the central symmetry of the nine-armed starfish formed by the spires provides a focus, while the spiral pattern formed by the ribs teases the eye outward and around. As well as being a gifted artist with pen-and-ink, John is also a wood sculptor, and works as a museum preparator and exhibits designer at the Cape Fear Museum in North Carolina. We are also indebted to Kim Hutsell, who put the COA Scientific Collecting Resolution into form for the back cover. Thanks to John and Kim both!

Walter E. Sage, III — A Farewell From Us All

May 17, 1949 - July 2, 1995

No member of the Conchologists of America was more beloved nor more dedicated in his service to our organization than Walter Elmer Sage, III, who passed away on July 2, 1995 at the age of 46 after a brief encounter with cancer.

Walter was an ebullient, outgoing and energetic person whose smile and homespun demeanor engendered the best of motherly instincts among the ladies and the enthusiastic and respectful support of fellow gentlemen shell collectors.

Although he had a degree in political science, Walter's first love was shells. So his talents were directed towards serving as president of the Louisville Conchological Society from 1974 to 1978 and as co-editor, then editor of its newsletter, *The Littorina*, from 1978 to 1982.

In 1983, at the age of 34, he joined the mollusk section of the Department of Invertebrates at the American Museum of Natural History in New York City as Senior Scientific Assistant and Collections Manager. For twelve years, Walter was largely responsible for greatly expanding and modernizing the mollusk collections, and freeing its curator, William K. Emerson, Jr., from arduous curatorial duties. Walter, an irrepressible Kentuckian, adapted well to the curious rigors of New York City. He lived alone in and daily commuted by bus from nearby Garfield, New Jersey. In this environment he was always very attentive and helpful to many of the members of the New York Shell Club and the Long Island Shell Club, and edited both their newsletters until he became ill.

His frequent travels, often in search for additions to the American Museum's collection, took him to Florida, California, Georgia, Panama, Texas and Hawaii. Earlier, most of his field experience had been with the land and freshwater mollusks of Kentucky.

Walter's great outside activity was as Treasurer of Conchologists of America in which he combined his business training with his knowledge of mollusks and love of people. He was a mainstay on the COA grants committee and a constant advisor to and business manager for its publication, *American Conchologist*.

His natural abilities as a writer led him to produce book reviews and numerous popular articles on shells for



Walter at Panama City, in a new shell shirt.

TWO FUNDS IN WALTER'S MEMORY

There will be two ways Walter's friends may express their respects and offer to help carry on his longheld hopes and desires. The American Museum of Natural History, through the guidance of Dr. W. K. Emerson, has added Walter's name to their William Old and Veronica Johns fund for the purchase of additional specimens for that museum's collection. Secondly, and perhaps more personally attractive to our COA members, is a plan to establish a COA-endowed Walter E. Sage, III grant in malacology, administered and distributed by the grants committee. Contributions should be sent with a cover letter expressing intent to Dr. Gary Rosenberg, new COA Grants Director, at the Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103-1195. Checks should be made payable to The Academy of Natural Sciences, Philadelphia. These contributions are deductible for Federal income tax purposes.

publications such as *The Nautilus*, *Hawaiian Shell News*, *Of Sea and Shore*, *Xenophora* (in France), in addition to those published in *The Littorina*, *New York Shell Club Notes*, and *Irradians* (Long Island Shell Club). He co-authored with Dr. Emerson nine scientific articles on marine mollusks.

Whatever Walter set out to accomplish he did with gusto and fervor. Finally, in 1989, he became "shell-shocked" with textiles bearing shell motifs. In five years he brought together over 600 different shell patterns, each represented by several yards of cloth. In his Garfield apartment he used the rows of cloth-filled cartons as a series of table tops. His family has generously donated this collection to the COA to sell or auction off towards a scholarship fund to memorialize Walter.

Walter was the oldest of four children. He lost his father in April of this year. He is survived by his mother, Mary Ann Sage, a wise, strong, and religious woman (1123 Hathaway Avenue, Louisville, KY 40215) and by his three supportive siblings, Mrs. Kaye Taylor, Mrs. Ellen Rouse, and a younger brother, Stephen E. Sage. A mass of christian burial was held at the Most Blessed Sacrament Catholic Church next door to the Sage family home, with interment at the Cave Hill Cemetery in Louisville.

It has been predicted that, when any of us inevitably cross that River Styx into the unknown, we shall find Walter splashing through those Elysian streams for the biggest freshwater mussels he'd ever seen, and shall see him dodging into heavenly cloth stores gathering up gaudier shell designs than he'd ever found on earth. All this will be his well-earned reward, while we less fortunate malacological colleagues will be condemned to reidentify the species we once named, and his shell-collecting co-members will be seen chained to desks on Cloud Nine, writing cheques for a flood of unwanted seashells.

It is hard to lose a dear friend. As we grow older we begin to lose more loved ones, each year it seems. But the wisest of philosophers have often said that our good deeds and our beneficial effects on others are truly our best hereafter and worthy of society's remembrance. Walter's record and spirit are his gift to us.

— R. Tucker Abbott

RECENT CHANGES IN THE PECTINIDAE PART 2

by Carole P. Marshall

Part 1 of Carole Marshall's article ran in the March 1995 *American Conchologist*, and covered the genera *Caribachlamys*, *Karnekampia*, *Laevichlamys*, *Spathochlamys*, and *Amusium*.

Before we get to some other changes in the pectens, I'd like to correct an error in Part 1. Under *Amusium*, "Abbreviated Diagnosis:" the line should have read, "One other feature of the *Amusiums* is the presence of unribbed, almost smooth auricles," not "ribbed auricles" as was written. I hope that my error did not cause too much confusion. And one more note: When an "old" name is given for a shell, that name is a recent old name, and not necessarily the original one given by the author. The genera of the old original names were most often just *Pecten* or *Ostraea*. The names given here as old names are the genus and species names that we have known the shells by for at least 25 years.

Most of us who deal with the pectens have been puzzled by the inclusion of some American species in the genus *Aequiptecten*. The following is an abbreviated diagnosis:

AEQUIPECTEN Fischer, 1886

Type species *opercularis* (Linné, 1758). Other species: *glyptus* (Verrill, 1882) and *lineolaris* (Lamarck, 1819)

ABBREVIATED DIAGNOSIS: Broadly rounded, valves nearly equal, well formed angular auricles. Sculpture of moderate number of large and nearly equal simple primary radial ribs. Concave curve on the rib flanks.

DISCUSSION: There are considered to be two species of *Aequiptecten* in America, *glyptus*, and *lineolaris*. It has been clear that our other American species previously considered in *Aequiptecten*, with a bulbous shape, prickly-spined close-set high ribs and pointed or sharp auricles, needed to be placed elsewhere. Other differences exist between the American species and the European in the marginal gapes, the hinge teeth, the shape of the auricles, and the marginal teeth. In a recent issue of *La Conchiglia* the following new genus has been published:

LINDAPECTEN Petuch, 1995

Type species *muscosus* (Wood, 1828)

ABBREVIATED DIAGNOSIS: Both valves inflated and fairly deep. Bears prominent erect scales. 3 rows of scales on each rib. Auricles almost equal in length. Fairly straight hinge line.

DISCUSSION: The new genus, at present, includes four species: *Lindapecten muscosus* (Wood, 1828); *Lindapecten exasperatus* (Sowerby, 1842) which is a name change for the shell formerly known as *Aequiptecten acanthodes* (Dall, 1925); one new species, *Lindapecten lindae* Petuch, 1995; and *Lindapecten tehuelchus* (D'Orbigny, 1846). *L. tehuelchus* was not included in the *La Conchiglia* article; however, Dr. Thomas Waller in 1991 indicated that *muscosus*, *exasperatus* and *tehuelchus* were in a closely related group. Therefore, even though Dr. Petuch didn't mention it, *tehuelchus* should probably be included in this new genus.

Lindapecten lindae is a spiny species similar to *muscosus* and was misnamed in my collection and probably in others. Compared to *muscosus* it appears longer from margin to hinge, and has narrower interspaces. In *L. lindae* the center rib of the left valve is higher, then three lower ribs of equal height are

followed by a higher rib, then two lower ribs and one higher rib. This pattern is the same on both sides of the center rib. In *muscosus* the ribs seem to be equal in height and the interspaces are wider. In *lindae* these spines are on all the ribs and nearly obscure the interspaces — it is almost impossible to tell where the spines leave off and the interspaces begin.

LYROPECTEN Conrad, 1862

Type species *Pallium estrellanum* Conrad, 1862 (fossil)

ABBREVIATED DIAGNOSIS: Paired hinge teeth, subequal auricles, hinge less than half the shell length, moderately deep byssal notch. Convex valves, some of which are ledged.

DISCUSSION: According to J.T. Smith, there is only one living species of *Lyropecten* and that is *magnificus* (Sowerby, 1835) from the Galapagos. *Lyropecten antillarum* (Recluz, 1853) has been moved to the genus *Brachtechlamys* (Waller, pers. comm.) I feel it may be moved somewhere else based on the differences in the hinge, internal carinae, and other features which are different from *Brachtechlamys*. So don't get too attached to the genus name *Brachtechlamys* for *antillarum*, and be prepared to move it again to a different genus. I guess it's enough for now to know it is not considered to be a *Lyropecten*.

NODIPECTEN Dall, 1898

Type species *Ostrea nodosa* Linné, 1758. Other living species: *fragosus* (Conrad, 1849), *subnodosus* (Sowerby, 1835), *arthriticus* (Reeve, 1853), *corallinoides* (d'Orbigny, 1834). (One other *Nodipecten* is said to live off Africa, *Nodipecten nodosus gabonensis* Nicolay, 1981.)

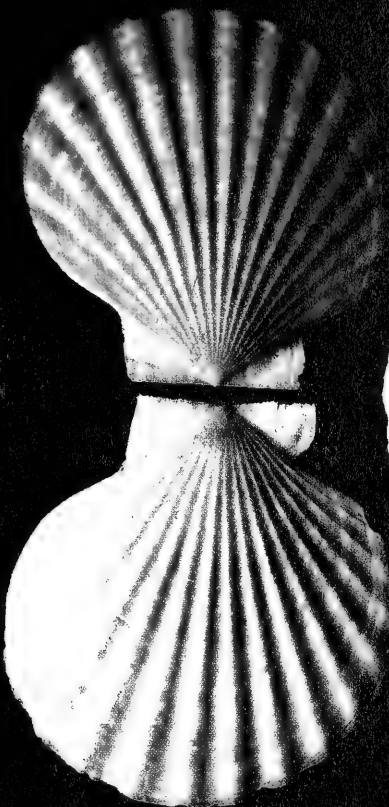
ABBREVIATED DIAGNOSIS: Paired hinge teeth, unequal auricles, hinge half the length of the shell. Deep byssal notch. Equal valves with costate lirate macrosculpture. Shells have hollow nodes and sometimes ledges. (Smith, 1991)

DISCUSSION: This is a difficult genus to define. The genus is based on the presence of nodes in its species; however, there are specimens in all the species considered to be *Nodipecten* that are smooth forms, with no nodes whatsoever. Until this confusion has been resolved, we will accept it as it is (Do you see why this scientific stuff is so difficult?) Dealing with *subnodosus* and *arthriticus* first: they are most obviously two different species. The left valve of *arthriticus* is flatter and has 10-11 ribs, and the ribbing and node pattern is completely different from *subnodosus* which has 8-9 ribs and both valves quite convex. Geographically, *subnodosus* lives from the Gulf of California and west coast of Baja California Sur as far north as Cedros Island, while *arthriticus* lives from the mouth of the Gulf of California at approximately the Tres Marias Islands south to Paíta, Peru (Smith, 1991). The shells from Panama that are named *subnodosus* are actually *arthriticus*.

Dealing with the differences in *nodosa* and *fragosus* is a little more difficult. I resisted this change more than any other, because this is (these are?) my favorite(s). I did my own research on my collection and after examining about 26 specimens, came to the conclusion that there are definitely differences in the two faunas. The northern group, now called *fragosus* (Conrad, 1849), had eight ribs in all but one specimen and the posterior auricle on the left valve was more angled, with the hinge part slightly longer and angling toward the disk slightly. The two valves put together also appeared to have the umbo recessed slightly due to the hinge of the right valve



*Aequipecten
opercularis*
(Linné, 1758)



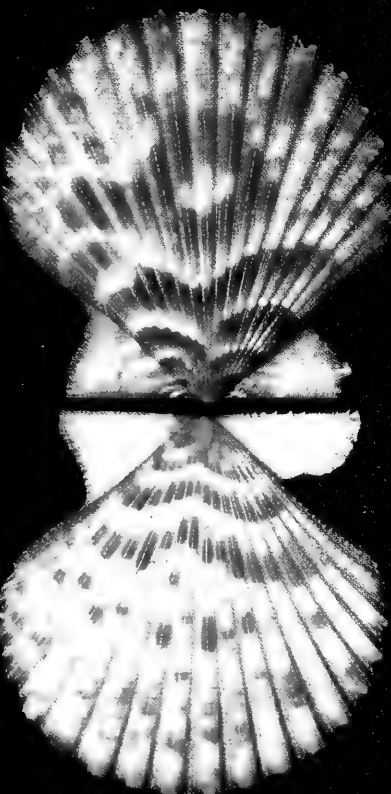
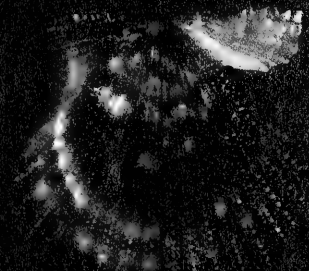
Aequipecten glyptus
(Verrill, 1882)



Aequipecten lineolaris
(Lamarck, 1819)



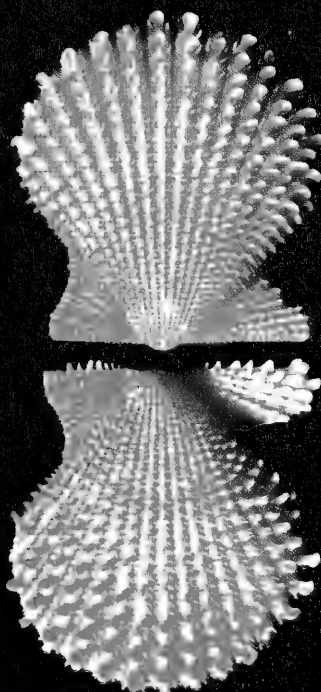
Old name: *Aequipecten
acanthodes* (Dall, 1925)
Now: *Lindapecten
exasperatus*
(Sowerby, 1842)



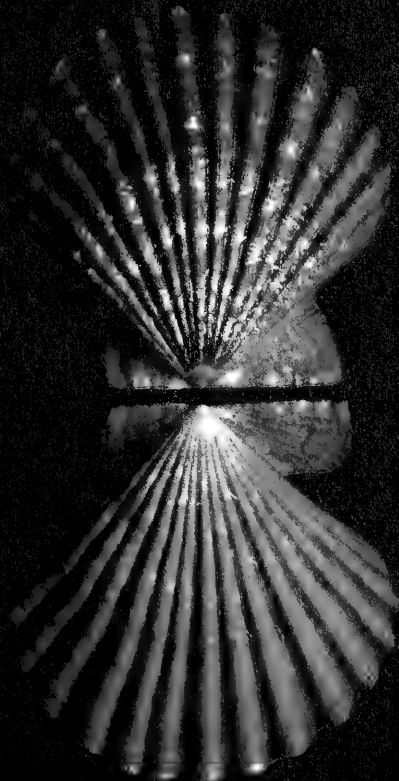
Old name: *Aequipecten
tehuelchus* (d'Orbigny,
1846)
Now: *Nodipecten
fragosus* (Conrad, 1849)



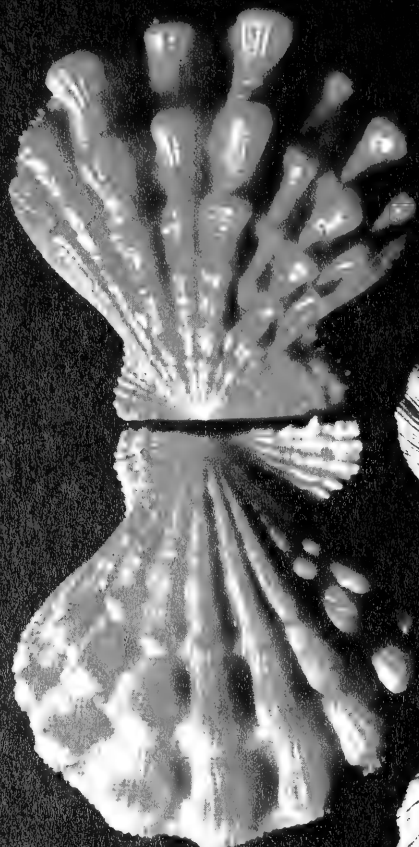
New species: *Lindapecten
lindae* Petuch, 1995



Old name: *Aequipecten
muscosus* (Wood, 1828)
Now: *Lindapecten
muscosus* (Wood, 1828)



Lyropecten magnificus
(Sowerby, 1835)



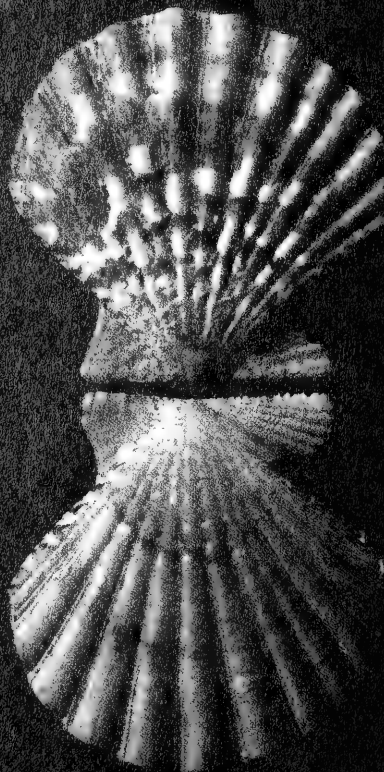
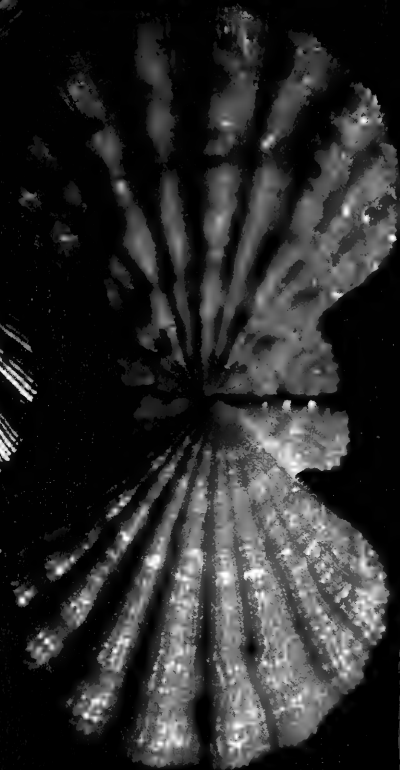
Old name: *Nodipecten nodosus*
(Linné, 1758)
Now: *Nodipecten fragosus*
(Conrad, 1849)

Nodipecten
subnodosus
(Sowerby, 1835)
Now: same

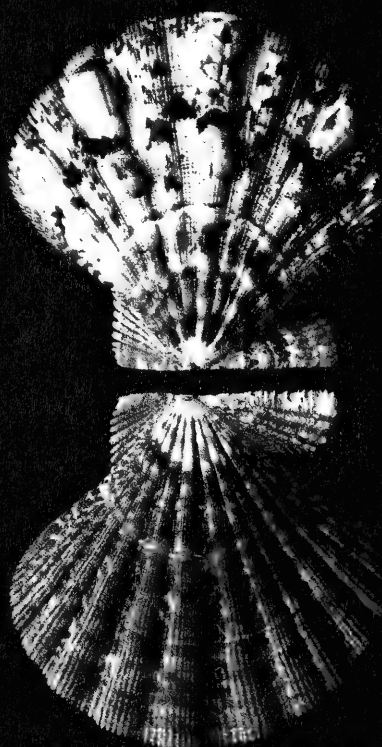


Nodipecten nodosus
(Linné, 1758)

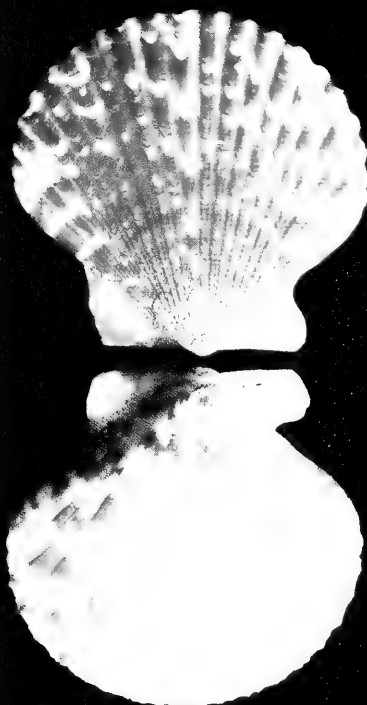
Nodipecten corallinoides
(d'Orbigny, 1834)



Old name: *Lyropecten*
antillarum (Recluz, 1853)
Now: *Brachtechlamys*
antillarum (Recluz, 1853)



Old name: *Nodipecten subnodosus*
(Sowerby, 1835)
Now: *Nodipecten arthriticus*
(Reeve, 1853)



Old name: *Argopecten circularis*
(Sowerby, 1835)
Now: *Argopecten ventricosus*
(Sowerby, 1842)

Shagreen
microsculpture

LANDSNAIL COLLECTING IN INDONESIA

by Neil E. Fahy

In September of 1994 I took a two week cruise to visit the islands of the Lesser Sunda — Bali and the islands eastward to Alor, south to Savu and north to Sulawesi (Celebes). The trip was near the end of the dry season and not a good time for snailing.

Indonesia is a land of contrasts. The 13,700-island archipelago stretches for 4,000 miles — the distance from San Francisco to Bermuda. If the western tip of Sumatra were at San Francisco, Bali would be at St. Louis, Alor at New York City, Savu at Charlotte, NC, and our port in Sulawesi at Toronto. Although it is a large country, it is mostly water — the Indonesians call their country "Our Land Water."

The population is over 175 million, the fifth most populous country in the world, with 90% living in Sumatra, Java, and Bali. These three islands contain some of the most densely inhabited regions on earth, yet few places on earth are as sparsely settled as Kalimantan (Borneo) and Irian Jaya (western New Guinea). Indonesia is one of the few places where the four major religions of Islam, Christianity, Buddhism, and Hinduism are represented, but many tribal peoples still adhere to animistic beliefs.

The geology is also varied, with volcanoes, coral reefs, and remnants of former continents. Throughout much of Indonesia, at least one volcano is in view. The Greater Sunda has wet rain forest while the Lesser Sunda (where I went) is dry. The very fitting motto of the Republic is "Unity in Diversity."

The malacologist Alan Solem wrote, "While the terrestrial vertebrates of Borneo are Malaysian in affinity, and Wallace's Line* between Borneo and Celebes separates a distinctly Oriental from an Australian fauna, the land mollusks are unaware of such matters. There is basically a single fauna of land snail taxa that extends in very gradually diminishing numbers from Southeast Asia to the Solomon Islands." So large and varied as it is, Indonesia has many landsnail species. Since

landsnail classification is based on internal anatomy, empty shells are difficult to identify.

SINGAPORE

Spent a night in Singapore to recover from the long air flight. Made time to visit the Botanical Garden — a good place for snail collecting because of the watering. On the ground under trees were dead *Asperitas* shells. This is a Southeast Asian helicoid genus of large (over 25mm) shells, usually with one or more spiral bands and many species. My Singapore specimens are without a spiral band. I have not, as yet, determined the species. Collected with *Asperitas* were *Bradybaena similaris* and *Subulina octona*. These two "tropical tramps" are widespread throughout most tropical and warm temperate regions. They are spread by commerce and, consequently, are found near human habitation and port cities. *B. similaris* is native to China and is characterized by its 12-16mm flattened cream-colored shell, usually with a thin brown peripheral spiral line. The other "tropical tramp" is a 10-15mm elongated, almost spindle-shaped shell with a lemon-yellow animal. The introduced 60-80mm African landsnail *Achatina fulica* with its solid, high-spired shell and irregular brown and cream blotches and zig-zag stripes was also present. It was introduced throughout tropical Asia as a food source. It has subsequently spread to Hawaii and was recently reported from Martinique in the Caribbean. It readily eats crops and is the biggest-sized and economically the most important landsnail pest in the world.

(Continued on page 8)



The Bali *Amphidromus perversus* has lemon-yellow tipped tentacles.



Asperitas species from Singapore



Amphidromus poecilochrous candidus — Komodo

*Alfred Russel Wallace. In 1858, Wallace and Charles Darwin, simultaneously and quite independently, published the Theory of Evolution. Wallace's Line follows a course of deep water running southwest from just south of the Philippine island of Mindanao, between Borneo and Celebes and down through the Lombok Strait to divide Bali from the island of Lombok. During the Pleistocene, when water levels were low, all the land north and west of the Wallace Line was a single large peninsula, across which species could move freely. Even today, these areas, now islands, share many of the same species.

LANDSNAIL COLLECTING IN INDONESIA (Continued from page 7)

BALI

Bali is overwhelming, hard to describe. It has many people, great activity, temples, dragons, masks, kites, and bright colors. Hinduism is strongest in Bali and diminishes eastward. There are flower-filled offering dishes in front of the shops and even at the entrances to individual hotel rooms. In Bali there are more shrines than houses. Each home has at least one shrine which protects the house from the volcano.

On the southern peninsula of Bali, across the road from the hotel, is a limestone quarry. Explored the area and found, walking on the foliage and the branches of smooth-barked trees, *A. fulica*, the helicoid *Asperitas rareguttata* forma *crebiguttata*, and tall, brightly colored *Amphidromus perversus*. The *Asperitas* species, with its single brown stripe, is a native to the Indonesian island of Flores, but has been introduced to Bali. *Amphidromus*, with sinistral and dextral shells, is one of the most colorful landsnail genera. Its spiral and radial color patterns are on an enamel-like shell surface. Native to Southeast Asia, it has many species endemic to specific islands. *A. perversus* are sinistrally and dextrally coiled in about equal numbers. I was told that *Achatina* does not damage the rice crop but is killed and fed to chickens.

SUMBAWA

After boarding the ship in Bali, our first stop was the large island of Sumbawa, dominated by the great Tambora volcano. In 1815 Tambora produced the largest eruption in history, even greater than the 1883 eruption of Krakatoa. We used zodiacs from the ship and waded ashore to a beach. Landing at the small village of Kananga on the Tambora Peninsula, we visited the school and fish hatchery. Because the village has a strong Muslim influence, women were asked to dress conservatively, i.e., shoulders and thighs (and everything in between) should be covered.

Spent the afternoon a short distance from Katanga on Satonda Island. The island is a volcano which was active until the 1815 eruption of Tambora. Apparently Tambora pulled the magma from Satonda, causing the summit to collapse. The result is a brackish crater lake. Above the lake shore is a sacred banyan tree. If you make a petition, hang a rock from a shrub at the lake shore, swim in the lake, and spend the night there, your petition will be granted. Since I couldn't spend the night, I searched for landsnails, unsuccessfully.

KOMODO

The island of Komodo is much larger (130 square miles) and more rugged (to 2,400 feet) than I had anticipated. The Komodo dragons are the largest lizards on earth — almost 10 feet long

and weighing 330 lbs. Presently, they are found only on the islands of Komodo and nearby Padar and Rinca, and on the western coast of Flores Island. It is interesting that these regions were also free of recent volcanic activity. Could volcanic action be the cause of the dragons' restricted range?

Since July, the park rangers have not been feeding the dragons, because the authorities want the dragons to hunt their own food. Consequently, some of the dragons are still waiting at the feeding site. The island is dry; its hills are bare, but there are trees and shrubs in the valley areas where the dragons are found. The rangers accompanied us as "protection," each carrying a forked stick to fend off any dragons we encountered. One ranger led and the other brought up the rear. We are fortunate the dragons are docile because I don't think a forked stick is going to deter a six-foot 300-lb carnivorous lizard.

Along the wooded path were many empty shells of the two endemic subspecies of *Amphidromus*, the spirally banded *A. poecilochrous candidus* and the both radially and spirally patterned *A. p. jaeckeli*. Both subspecies are sinistrally coiled. I searched unsuccessfully for dextral shells. I wonder why Komodo has only sinistral ones? At a dragon nest site there were shell fragments of the spirally-banded tree snail, *Asperitas colorata komodoensis*; the dragons occasionally eat them. Further along I was fortunate to photograph live specimens of these and also of *Amphidromus poecilochrous candidus*, another tree dweller. The *Asperitus* was in a rotted hole in a tree and the *Amphidromus* was on a tree trunk; both animals were about five feet above the ground. The snails of both genera were abundant inland in the valleys but absent within a few hundred yards of the coast, perhaps because of a lack of trees near the coast.

Spent the afternoon at the Pink Beach on the east side of Komodo. The pink color is due to broken bits of organ-pipe coral. I walked up on the ridge looking for snails but the lack of trees rendered my search unsuccessful. When I returned to the beach the ship had set up an ice cream stand there, serving three flavors and eleven toppings — an example of the hard life on a tropical island. Fortunately, the dragons haven't tasted ice cream yet.

SAVU

We now left the volcanic islands and headed south to Savu, a remnant of a former continental region. The low grassy island produces highly prized miniature horses. Made a wet landing on a long, steep, sandy beach. We were welcomed by the chief and horsemen dressed in their traditional Ikat clothes. The people are very handsome except for their teeth and lips which are stained by betel juice.



A live *Amphidromus poecilochrous candidus* live on tree bark. Notice the purple protoconch.



The fragile shell of *Hemiplecta wichmanni* from Sulawesi

This is a one-economy island, an economy based on the lontar palm. It produces wood for construction and leaves for weaving, thatching, and making musical instruments. The tree also produces a sugar-rich sap which is boiled and made into palm sugar, as well as a refreshing sweet drink, and even wine. A man climbed a lontar palm and collected some of the sugary sap. Previously prepared sap was poured into lotar leaf cups. It tasted refreshing with a slight lemon flavor and was slightly carbonated. The boiling made it thicker than 7-Up. After more dances we inspected the Ikat weaving.

Took a ride in the back of a truck, with a hole in the floor, to see the sacred stones about a mile or more inland. These stones are on the crest of a hill overlooking the coastal area. They are four feet in diameter, circular, but flat on top and about a foot thick. They are composed of a different rock than the rest of the area. When asked about the origin of the stones, they answered, "They were spirited here." On a terrace about thirty feet above sea level under a banyan tree, I found empty shells of *Rhagada* cf. *soloensis* and *Chloritis agrillacea*. The *Rhagada* is a 15mm depressed shell with multiple brown spiral stripes and a thickened lip. The only Indonesian species I found in the literature is from Solor Island in East Flores. My specimen may be a range extension or possibly a new species. *Chloritis* is a genus with many Indonesian species. Mine has a 20mm light-brown helicoid shell.

ALOR - TAKPALA VILLAGE

Sailing northeast, we arrived at the most eastern point on our journey, the island of Alor. The Alor people have negroid features and fuzzy hair. The men look much more threatening than at Savu, but then they were cannibals until 1960! After a short welcome ceremony in the port, we rode buses to the north coast traditional hillside village of Takpala. Here we were greeted by "friendly" natives with spears. They charged at us as we walked into the village. We were told that this was to impress us but that we were welcome — they would have thrown the spears if we were not welcome! They did some traditional dances which were very colorful.

KAKABIA

Kakabia is a small (a mile or less in diameter) island in the middle of the Flores Sea. Took a zodiak ride around the island looking at the bird life. Saw frigate birds, brown boobies, tropic birds, etc. Landed and collected some specimens of the "tropical tramp," *Lamellaxis gracilis*. This elongated species, originally from India, is considered the most widely distributed landsnail in the world. It is related to *Subulina octona* which is also a detritus feeder and has a lemon-yellow animal. They are both in the same family but can be distinguished by the columella. In *Lamellaxis* the columella is straight, while in *Subulina* it is truncated. Seems strange to find these introduced species on such a remote and tiny island.

KABAENA

Travelling westward, we arrived off the coast of Kabaena Island at the entrance to the Bonerate Gulf of Sulawesi. On arrival at the pier we were met by an elementary school band. Their instruments were made of bamboo — they even had a sliding "trombone." The music sounded like a calliope. The envoy of the Sultan greeted us and led us to the Sultan. We then had a welcome ceremony and dances. Walked around the village of 27,000, including the stilt village of the Sea Gypsies. Walked on a rickety bamboo path to visit a Gypsy home. Left my shoes

(Continued on page 10)



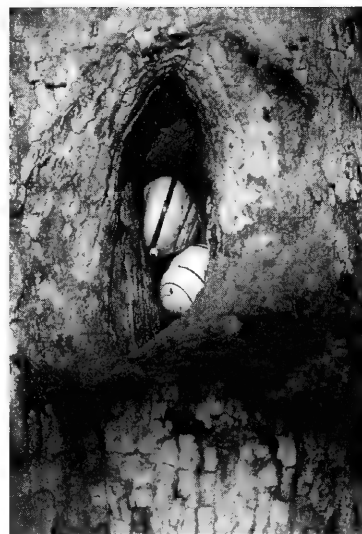
Notice the truncated columella on the tropical tramp, *Subulina octona* — Singapore



Asperitas rareguttata form *crebiguttata* on "unfriendly vegetation." — Bali



Amphidromus perversus has both dextral and sinistral coiling. — Bali



Amphidromus colorata komodoensis live in a tree. There are others down the hole. — Komodo

LANDSNAIL COLLECTING IN INDONESIA (Continued from page 9)

outside before entering, and enjoyed their hospitality.

Across from Kabaena Island is the small flat coral island of Sogori. Walking along the shore, saw a live volute with its brown mantle edged in yellow, foot-long brown sea cucumbers, moon snail egg cases, and a brittle star.

SULAWESI — NANGGALA VILLAGE

Sulawesi is the current name for the Celebes. Our destination was Toragaland in the inland valley west of the port city of Palopo. Toragaland is as distinctive as any place I've visited. From a distance the parabolic house roofs resemble arks floating in a sea of tropical foliage. The eaves curve upward, like the prow and stern of a ship, projecting dramatically beyond the ends of the house. Interlocking layers of split bamboo covered with flat strips of pounded bamboo form the roof and act like a thousand sloping gutters to keep the house snug and dry during torrential rains.

The house front had the curved wooden head of a water buffalo — symbol of wealth — attached to it. Below the painted white head ranged a set of panels depicting entire buffaloes, some black, some spotted. Buffaloes are ranked according to color. Piebald buffaloes are the most valuable, worth ten to twenty times the price of an ordinary black animal. The pink buffalo with white hair and china blue eyes is the rarest.

SULAWESI — LEMO VILLAGE

A few minutes' ride from Nanggala is Lemo, a silent cliff of death. The cliff is impressive because, standing like spectators are wide-eyed "doubles" leaning on railings like sports fans, on the balconies of a condo. When a new corpse is buried in a cliff tomb, his life-size double takes its place in the rock gallery. The "doubles" with sleepless eyes are fully dressed and often provided with travelling sacks for their trip to the land of souls.

At the base of the limestone cliffs were dead shells of *Cyclophorus politus* (the only operculate snail I saw), *Hemiplecta wichmanni*, and *Planispira bulbulus*. This *Cyclophorus* has a 20mm rapidly expanding shell with a wide umbilicus, rounded aperture, and an apex which does not project above the depressed shell. The *Hemiplecta* has a beautiful, greenish, 40mm, depressed, fragile shell. In contrast, *Planispira* is a 35mm solid discoidal shell with a reflexed lip.



Notice the reflexed lip on *Chloritis argillacea* — Savu



Planispira bulbulus from Sulawesi

SALAYAR — PASI

Anchored off Pasi Island. Most people went snorkeling. Four of us went to the beach a little distance from the village. Our leader told us we were probably the first white people to arrive here in a long time. Children met us on the beach. I said good morning in Indonesian and they stepped back in surprise. Then they smiled and approached. They followed the three beachcombers which allowed me to leave the beach and inspect the inland vegetation. It was mostly palm and a few spiny shrubs. Under new palm fronds, found a *Bradybaena similis* and *Lamellaxis gracilis*. Took a litter sample which has yielded many microscopic species.

Along the beach, saw chocolate chip sea star and the sea urchin *Diadema setosum*. Offshore are large permanent arrow-shaped fish traps, some a block wide, made of bamboo. The traps point away from the beach. When fish encounter a barrier, they turn into deeper water. Utilizing this principle, the natives construct the traps so the fish cannot escape. The natives wait until low tide, wade to the traps, and pick up the fish.

SABALANA ATOLL — LAIJA ISLAND

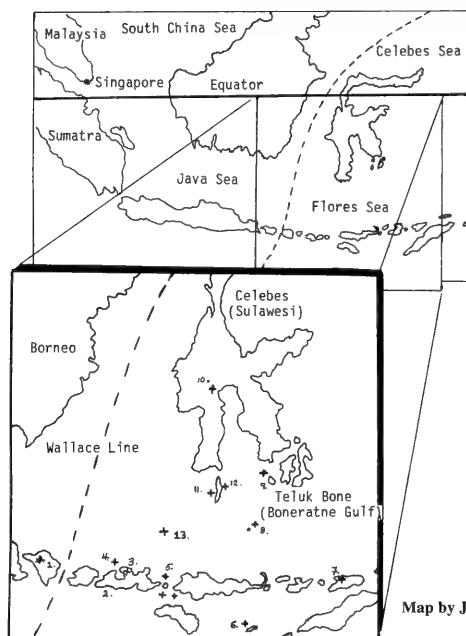
Our last stop was the Sabalana Atoll. The captain picked out the tiny island Laija as our landing site. The island has a long sand spit on the east and palm trees on the west with a maximum elevation of 10-15 feet. There are about four or five stilt houses in a cluster on the north side. Using the zodiaks, we landed on the sand spit. There was pumice at the high water line. I liked to imagine it was from Krakatoa or Tambora. At the connection of the spit to the island there was a saltwater lagoon. Made a transect across the island and down its length. This was a "friendly" island without thorn bushes. It was the only unthorny place we visited. Snail collecting was poor. The island had marine snails under the trees inland — I imagine it is frequently under seawater. Near the houses, found several large marine shells of *Telescopium telescopium* among the ashes of a fire pit. The animals were probably eaten by the locals.

Komodo dragon is the largest lizard in the world.



Tiny shells picked from Kakabia leaf litter. The tall shells are 5.5mm.





Map by John Timmerman

1. Bali
2. Sumbawa
3. Tambora
4. Satonda
5. Komodo
- 5a. Padar
- 5b. Rintja
6. Sawu
7. Alor (Ombai)
8. Kakabia
9. Kabaena
10. Palopo
11. Pasi
12. Salayar
13. Sabalona

CONCLUSION

What did I learn from the trip? Large snails occur on large islands and small snails occur on small islands, introduced snails can occur anywhere, dragons do exist, and people are friendly all over the world.

I still have many small specimens to identify, but the following list will give an idea of the landsnail fauna seen: **CYCLOPHORIDAE:** *Cyclophorus politus* Sby., 1843 - Sulawesi. **SUBULINIDAE:** *Lamellaxis gracilis* (Hutton, 1834) - Kakabia, Pasi, Sabalona; cf. *Rumina decollata* (L., 1758) - Sumbawa; *Subulina octona* (Brug., 1792) - Singapore, Sulawesi. **ACHATINIDAE:** *Achatina fulica* (Bowdich, 1822) - Singapore, Bali, Sulawesi, Salayar. **ARIOPHANTIDAE:** *Asperitas rareguttata* Mousson, 1849 - Alor; *A. r. crebiguttata* (Martens, 1867) - Bali; *A. species 1* - Singapore; *A. species 2* - Bali; *A. colorata komodoensis* Haltenorth & Jaeckel, 1940 - Komodo; *Hemiplecta wichmanni* P. & F. Sarasin, 1899 - Sulawesi. **CAMAENIDAE:** *Amphidromus perversus* (L., 1758) - Bali; *A. poecilochrous candidus* Mjajasasmita, 1963 - Komodo; *A. p. jaeckeli* Laidlaw, 1954 - Komodo; *Chloritis argillacea* Férussac, 1821 - Savu; *Planispira bulbulus* Mousson, 1849 - Sulawesi; *Rhagada* cf. *soloensis* (Martens, 1863) - Savu. **BRADYBAENIDAE:** *Bradybaena similis* (Férussac, 1821) - Singapore, Sulawesi. **UNIDENTIFIED:** Singapore, Bali, Kakabia, Sagori, Sulawesi, Pasi, Sabalona.

Aclophora sagei Rolán and Fernández-Garcés, 1995

In the April, 1995 issue of *APEX*, vol. 10(1) a publication of the Société Belge de Malacologie, Emilio Rolán and Raoul Fernández-Garcés revise "The family Triphoridae (Mollusca, Gastropoda) in Cuba. The genera *Marshallora*, *Mesophora*, *Similiphora*, *Eutriphora*, *Latitriphora*, *Aclophora* and other species without generic affiliation." They describe a new species, *Aclophora sagei*, "Named after Walter E. Sage of the AMNH for his continued help in our research."

MORE ABOUT WALTER SAGE

...After my traumatizing first visit to New York City to visit AMNH for my master's work, I vowed never to return (small town hick in Big City, etc.). Upon hearing this, Walter wrote and said that if I ever wanted to go back, I could stay with him and ride in with him (it was the trip on the Long Island Railroad and the my-life-flashing-before-my-eyes experience of the subway that reduced me to whimpering Jello). Considering that Walter didn't know me from Jeffrey Dahmer, I thought that was very generous. Ironically, I was going to take him up on his offer this year.

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COA '96 — DIAMONDS IN THE SUN JULY 15-19, 1996

Greetings from the St. Petersburg Shell Club. We cordially invite the Conchologists of America to **St. Pete Beach, Florida — Tradewinds Resort** — to celebrate the 24th Convention of COA and the 60th (Diamond) Anniversary of the St. Petersburg Shell Club.

Fun in the Sun, including interesting programs and events, as well as visits to several intracostal **Islands** and the **Florida Aquarium** are all in the planning stages at this point.

The St. Pete Beach and Greater Tampa/St. Petersburg Area offers numerous attractions in addition to the lovely **Beaches**. There are four **Marine Science Centers** (Clearwater, Gai Braith, USF and Mote) within easy driving distance, an **Aquarium** at the Downtown Pier as well as **Art and Historical Museums**. Also available are many county **Parks** with access to the **Gulf and Bay**.

The **Tradewinds Resort**, located on 18 acres in the heart of St. Pete Beach, is the largest beachfront resort on Florida's central west coast. It lies directly on the Gulf of Mexico, and has lovely **Victorian Gazebos** and a **breezy, casual ambience** with a **waterway and lush landscaping**. The hotel is located about 35 minutes from Tampa International Airport, via Interstate 275. Limo service is available.

Come one and all!

Available to clubs on a first-come, first served basis is a video tape with a preview of the hotel and one of the trips. To reserve, contact Betty Lipe at the above address and give the date that you want to show the video. The only cost to a club is the postage to receive the video and to return it to the Lipes. It is requested that the video be returned the next day after showing so that it can be sent on to the next club. Postage costs should run about \$3.50 each way.

CALL FOR PROGRAMS 1996

For those of you interested in giving a program, please send a resume giving the program name and a short description of your program. Also please give name, address and phone # or fax #, so the Program Committee will be able to reach you. Send resumes to Betty Lipe, P.O. Box 49191, St. Petersburg, FL 33743-9191.

RECENT CHANGES IN THE PECTINIDAE PART 2 (Continued from page 4)

overlapping the left and the posterior ear of the right valve being wider than that of the species *nodosus*. In the specimens now considered to be *nodosus*, there were 9 ribs, giving the shell a wider look, the posterior auricle on the left valve was more square and the hinge line appeared straighter, because the posterior auricle of the right valve does not overhang on that side when the two halves are put together and viewed from the top of the left valve. *N. fragosus* also has more of a tendency to have ledges, while those from the south were more even in the interspaces, without ledging greatly. *N. nodosus* has coarser macrosculpture and less tendency to develop large bulbous nodes.

N. fragosus is said to live from Cape Hatteras, North Carolina to Florida and across the Florida Panhandle to the western Gulf of Mexico off Texas and the Yucatan Peninsula to off Campeche Bank, Mexico. *N. nodosus* is said to live in the southern Caribbean south of the Greater Antilles, the Virgin Islands, the Lesser Antilles, eastern Central America south of the Yucatan Peninsula, eastern Panama to Colombia and Venezuela and as far south as Rio de Janeiro, Brazil (Smith, 1991).

One more change I would like to call attention to is that of *Argopecten circularis* Sowerby, 1835 to *Argopecten ventricosus* Sowerby², 1842. According to Grau (1959) and Waller (1991) the shell was described and named twice by Sowerby (the 1st). One name was *circularis* and one was *tumidus*, both named in 1835. The holotype of the shell he named *circularis* was found to be that of an *Argopecten irradians concentricus* (Say, 1822). The name *tumidus* could not be used as there were already two pectens named *tumidus*. One, *tumidus* Turton, 1819 was found to be a synonym for *similis* Lasky, 1811. The other is a fossil from Germany, named by Hartmann in 1833. So neither name was available in 1835. D'Orbigny renamed the Panamic shell *inca* in

1846 as a replacement name for *tumidus*, but previous to that, Sowerby² (1845) named the Panamic shell *ventricosus*.

Since the name *circularis* was found to be a shell other than the Panamic species, *tumidus* was occupied, and *inca* was named after *ventricosus*, the correct name for the common Panamic *Argopecten* is *Argopecten ventricosus* Sowerby, 1842. The only problem seems to be that over the past 160 years many workers have changed the name to *ventricosus*, only to have the next worker call it *circularis* again. Even Grau, in 1959, although giving an extensive bibliography of the shell and synonyms, used *circularis* instead of *ventricosus*. Sometimes it just seems to be very difficult to change.

I will try to keep you informed from time to time about what is going on with pectens but, lest you get discouraged by the changes, I would like to paraphrase that old saying about roses by saying, "A shell by any other name is just as beautiful."

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BOOK REVIEW

The World's Most Beautiful Seashells by Leonard Hill and Pete Carmichael. 246 pp., 462 colored plates. Carmichael Publications, Tampa, FL. Hardback \$29.95; softcover \$22.95. ISBN 1-884942-00-8.

Without question the stunning photographs of the 460 species in this beautiful coffee-table book are the best yet offered to today's growing legion of shell-lovers. No conchologist, whether professional or amateur, will fail to enjoy this portfolio of exquisite presentations of what, indeed, should be called "The World's Most Beautiful Seashells." Each photograph by Pete Carmichael is a well-balanced portrait with several views of each rare or well-known shell familiar to most connoisseurs of shells.

Three hundred and seventy marine gastropods, 68 attractive bivalves, and a sprinkling of 21 terrestrial tree snails take the reader through a parade of traditionally sought-after species. Quite naturally, dealer-purchased species dominate, with 33 devoted to the be-spined Thorny Oysters and brilliant scallops. Close-ups of the Tent Olive, the Cat's Tongue Thorny Oyster, Kiener's Delphinula,

and the Purple-ringed Top Shell are worth many enjoyable moments of reflection upon the "miracle of mollusks."

The text by biologist Leonard Hill accompanying each illustrated species supplies interesting information. In all cases the accurate popular and scientific names are given. In many instances, however, no shell size is indicated, although the viewer with some knowledge of shells may assume that most pictures are life-size. Although it scarcely mars the otherwise correct identifications, the wrong use or absence of parentheses around the author-and-dates should not be relied upon. This is not meant to be a technical identification book, but an index would have been very useful.

When bad weather keeps you off the beach or when driving rain or snow is swirling about your abode, take this book in hand and relive your collecting fantasies of deepsea treasures. You will rekindle your love of nature and once again marvel at the exquisite creations that evolved on our planet for our enjoyment and protection.

— R. Tucker Abbott

NEWS OF OTHER SHELL SHOWS

The 1996 Melbourne (Australia) Shell Show will be held on February 24 and 25 at the Hampton Community Centre. For more information, write Chris Bunyard, Secretary of the Port Phillip Bay Shell Group, 21, Hillcrest Road, Eltham North, Victoria 3095, Australia

The Association Française de Conchyliologie announces the dates for the first Nantes Shell Show, November 11 and 12 at the Cité des Congrès, Nantes Atlantique, 5 rue de Valmy, 44000 Nantes. For information on the Nantes show, write Pierre Etienne LeRoy, La Haugardière, 44860 Pont St. Martin, France.

One Man's Opinion Part II

ALL IN THE FAMILY:

A Look At What's Going On in the Superfamily Conoidea. . .

OR A Turrid By Any Other Name Is Now A Cone, But What's a Terebra?

by Gene Everson

For some time now I have been hearing that certain turrid genera are now in the Conidae. As one shell show judge said, "It's a done deal." I thought this was pretty important stuff not to have been circulated for collectors to be made aware of. I finally acquired the reference, authored by John D. Taylor, Yuri I. Kantor and Alexander V. Sysoev, published in the Zoology Series of the **Bulletin of Natural History Museum, London**, Vol. 59, number 2, 25 November, 1993, pages 125-170. I found that the changes are not based on the latest reclassification range of osphradial characters and sperm morphology*, but on foregut anatomy. I'll bet you are already getting a gut feeling about this one! The title is "Foregut anatomy, feeding mechanisms, relationships and classification of the Conoidea (= Toxoglossa) (Gastropoda)." For those of you who don't speak scientific jargon, the foregut is everything above the gut, including, in this case, the proboscis, poison glands and a particularly conoidal feature called the rhynchocoel. The superfamily Conoidea (= Toxoglossa) includes the cones, terebras and turrids. According to this paper, they should now be spread among the families Drillidae, Terebridae, Pseudomelatomidae, Strictispiridae, Turridae, and Conidae, with a number of former turrid taxa placed in the seven subfamilies now assigned to the Conidae.

The synopsis states:

A survey of the anterior alimentary system of species from all the higher taxa of the highly diverse gastropod superfamily Conoidea (including the Turridae, Terebridae & Conidae) has revealed a great variety of foregut structure. As series of the anatomical characters of the rhynchodeum, proboscis, buccal mass, radular apparatus and foregut glands has been defined and their distribution established amongst various conoidean families and sub-families. . . a classification incorporating the new anatomical data and based partly upon the phylogenetic analysis recognizes 6 families and 13 subfamilies of Conoidea. . . New data suggest that the Pervicaciinae and Terebrinae share a common ancestor and there is little evidence to justify familial separation of the Coninae.

The introduction informs us that the superfamily Conoidea includes the families Turridae, Conidae, Pervicaciidae and Terebridae and is extremely diverse, with as many as 679 genera and 10,000 living and fossil species claimed for the Turridae alone, *Conus* with around 500 living species. Current classifications within the Conoidea are based almost entirely upon shell characters, or upon a combination of shell and radular characters. The Conoidea are considered to be monophyletic because the families share the common apomorphy of a venom apparatus consisting of the venom gland and muscular bulb. "This is thought to have been lost in some taxa, such as some highly-derived members of the Daphnellinae and Terebridae. . . and all Strictispirinae." Well, is it lost or not? Such a detailed anatomical study should find a venom gland and muscular bulb if they are present. And if they are basing their classification on the presence of a venom gland and a muscular bulb, how can they include those that don't have it? "Thought to have been lost" doesn't instill much confidence.

On page 142: The foregut has accessory salivary glands present in a few species of Turridae, some Conidae and Terebridae. "They have a similar histology to the accessory

salivary glands found in other neogastropod families such as the Muricidae." Yes, this statement stopped me too. This leaves the door open for the next empire builders to lump Murex and Cones.

On page 145: The summary of foregut anatomy states there are several anatomical characters which define the Conoidea and are present in most representatives. Number one of these is the presence of a venom gland. (2 through 5 are: the buccal mass located at the base of the proboscis, the proboscis formed by the elongation of the buccal tube, the presence of a permanent rhynchodeum, and the tendency for the loss of the central and lateral teeth from the primary five-toothed radular row. Then on page 150:

A key autapomorphy of the Conoidea is the possession of the venom apparatus, comprising the venom gland and muscular bulb. There has been much discussion concerning the homology of this gland. But Ponder (1970; 1973) showed that in the neogastropod family Marginellidae a long coiled gland, similar in general appearance to the conoidean venom gland is formed by the stripping off of glandular folds from the oesophagus. In some marginellids the gland terminates at the posterior in a muscular bulb which is homologous with the gland of Leiblein. The venom gland of conoideans may have been derived in a similar way and is probably homologous with the glandular folds of the oesophagus and the gland of Leiblein in other neogastropods.

When some malacology student requests a grant from the COA to prove that marginellas belong in the Conidae, I strongly urge that they be refused immediately. If the current trend continues, we'll soon have worked back to Cypraea, or maybe even slit shells!

A separate family, the Pervicaciidae was proposed by Rudman (1969) for *Pervicacia tristis*. However, Bratcher and Cernohorsky (1987) included *Pervicacia* and similar forms in the Terebridae. Then, in 1990, Taylor confirmed the distinctiveness of *Pervicacia* and showed that many other terebrids should be included in the family Pervicaciidae. Based on the foregut anatomy studies, Taylor *et al.* are proposing Pervicariinae and Terebrinae as subfamilies of the Terebridae (where I think they should have been left in the first place). The Pervicariinae are separated from *Hastula* (representing the Terebrinae) by the loss of the proboscis, the presence of extensible lips, a septum in the rhynchocoel (although this is present in some Terebrinae) and the loss of the venom gland.

I believe one of the greatest weaknesses of this study can be shown by considering quotes from a single paragraph: (Capitalization is mine):

As a result of our analysis of foregut characters throughout all the conoidean higher taxa we propose a new classification of the superfamily. THIS CLASSIFICATION REPRESENTS A RATHER CONSERVATIVE COMPROMISE POSITION. Although in principle the classification SHOULD be based upon the results of the phylogenetic analysis, WE WERE CONSTRAINED BY THE RATHER POOR RESOLUTION OBTAINED WITH OUR DATA SET. MOREOVER, ONLY A RATHER SMALL SUBSET OF CONOIDEAN SPECIES HAVE BEEN EXAMINED IN ANY DETAIL. Information from taxa NOT INCLUDED in the cladistic analysis (mainly radular characters) HAS ALSO BEEN USED IN CONSTRUCTING THE CLASSIFICATION. An example of the problem is the family Turridae, which comprises the four subfamilies with wishbone marginal teeth, plus the

(Continued on page 14)

*and important enough to be used to place melongenae, fasciolarids and nassas into the Buccinidae, as I reported in my column in the March 1995 *American Conchologist*.

One Man's Opinion (Continued from page 13)

Zonulispirinae. The cladistic analysis SUGGESTS two different clades for these subfamilies. THIS IS CERTAINLY POSSIBLE, BUT THE BRANCHES ARE SUPPORTED BY RATHER FEW, AND PERHAPS WEAK, APOMORPHIES. DESPITE THE DEFICIENCIES this is the first comprehensive classification of the Conoidea which includes anatomical characters. SOME OF THE TAXA HAVE ONLY PROVISIONAL STATUS. For example, the subfamily Clathurellinae has been divided up into five informal groups; it MAY WELL BE POLYPHYLETIC, BUT WE HAVE INSUFFICIENT EVIDENCE TO RESOLVE THE SITUATION. SIMILARLY, WE ARE UNCERTAIN OF THE STATUS OF THE CONORBINAE AND TARANINAE.

Sounds weak to me.

Summary of Proposed Classification

Superfamily CONOIDEA	Family CONIDAE
Family DRILLIIDAE	Subfamily Clathurellinae
(ICZN pending)	Coninae
" TEREBRIDAE	" Conorbinae ?
Subfamily PERVICACIINAE	" Oenopotinae
" TEREBRINAE	" Mangeliinae
Family PSEUDOMELATOMIDAE	" Daphnellinae
" STRICTISPIRIDAE	" Taraninae ?
" TURRIDAE	
Subfamily CLAVATULINAE	
" CRASSISPIRINAE	
" ZONULISPIRINAE	

Every one of these classifications is analyzed under Diagnoses of Higher Taxa. One example of the problems: (under family Drilliidae) "Remarks: The anatomy and radula are known for only a very few species of Drilliidae. This prevents us from introducing any subfamilial classification of this possibly complex family." Does this sound like a finished study worthy of major classification changes?*

In *The Veliger* 37(4): 432-435 (October 3, 1994), Alan J. Kohn and James H. McLean review the foregut study, followed by a reply by Dr. Taylor. I have selected a few of Kohn and McLean's pointed comments. "While a major accomplishment, the work under review is unfortunately difficult to use, partly because of its organization and partly because of the inherent complexity of the authors' task. To determine the characters that distinguish one family, subfamily, or genus from another, the reader must work from the cladogram (with numbered nodes) and the new classification on p. 154, to the table of synapomorphies indicated by node number and character number (p. 153), to the tabular character analysis (p. 151), which decodes character and state numbers. A full character state matrix is given on p. 152."

"Each family and subfamily in the authors' new classification is described in the section, 'Diagnoses of Higher Taxa.' These summarize shell, radula, and foregut characters but do not explicitly compare and contrast similar taxa in a way that would facilitate the challenging task of specimen identification."

"Because foregut anatomy constitutes their major contribution to the taxonomic database, Taylor *et al.* consider only the living Conoidea. . . . Although the Conoidea are well represented in Cretaceous and Tertiary strata, the work fails to mention the fossil record of any of the taxa. . . . The omission of fossil genera in the appendix also impedes use of the new classification, because all available genera need to be taken into account when allocating taxa at the species level."

The new family-group classification of the Conoidea that Taylor *et al.* propose is quite unprecedented in that it ranks the Coninae as a subfamily of a family Conidae that includes other 'higher turrid' subfamilies. . . . Resorption of inner shell walls, mentioned. . . but excluded from the Taylor *et al.* analysis, has long been considered important in classification and the hallmark of the traditional family Conidae (d'Orbigny, 1852; Van Koenen, 1867). It served as a key character to distinguish subfamilies of Conidae in the classic monograph of Cossman (1896). Inner shell resorption likely represents a suite of interrelated characters apomorphic in Conidae (Kohn, 1990) and its inclusion might strengthen the cladistic analysis. The classification proposed by Taylor *et al.* departs considerably from the cladogram. It explicitly includes information, mainly radular characters, from taxa that could not be included in the cladistic analysis, because of the absence of anatomical information."

Kohn and McLean admit, "These problems are readily resolvable and the classification of the Conoidea remains in a state of flux."

In the reply by Dr. Taylor,

. . . the classification we propose represents a conservative compromise, and there are several reasons for this restraint. Primarily, the number of species we analyzed in the cladogram is only a small subset of the total diversity of conoideans, and new combinations of foregut structures are still being discovered (Kantor and Taylor, 1994; Taylor in press). Moreover, the cladogram was not particularly well resolved or robust, and some nodes are supported by rather few, possibly weak characters. New and continuing work should help resolve some of these problems, although Arnold (1990) has suggested reasons why morphological phylogenies of some groups may never be resolved. . . . Other organ complexes such as the reproductive system will likely yield further suites of characters but, as yet, remain uninvestigated.

Translation: "we need to keep publishing to maintain or gain status at our institution. Keep buying every new shell book to see what families our favorite shells are in now." Why else would these guys keep banging their heads against a wall when they admit that the answers may never be resolved? Heck, I'm a long way from being a scientist, and I can solve this problem. Taxonomy was not handed down to us from on high, a God-designed diagram of life that is left for us to discover. It is a man-created system that attempts to impose order, whether there is order or not. So let's stop searching for divine intervention in a foregut, and put the cones into the Conidae and the turrids (Remember the turrid notch?) into the Turridae. Ahhh. . . wasn't that easy? (Yes, I know the cones have a slight notch in the posterior of the outer lip, but it's as easy to differentiate that notch from a turrid notch as it is to differentiate the stromboid notch.) Now you don't have to ignore dead shells and whole fossil genera either. If you must feed your addiction to anatomy, take your internal feature-of-the-month and shuffle a genus or two, but leave the changing of families to some important character. . . maybe how much slime per square inch is secreted by a group at standard day temperature and pressure, after a 24-hour fast.

Who do malacologists work for? Mankind and the enrichment of his knowledge, or themselves? Are these studies a toy for them to endlessly toss about within the science of malacology? Or is it for the use of mankind? If it is for mankind, isn't it incumbent upon them to produce something of use? Malacologists do not work for the benefit of collectors, but their results should be intelligible to those outside the science.

Next issue I will report on what I believe to be the definitive malacological study that should be used as a model for future revisions. The result: No more Thaidinae.

** The complete list of genera within the above family/subfamily listing is not shown here because it consumes six pages.

ANNUAL LINES IN *LAMPSILIS RADIATA LUTEOLA* (LAMARCK, 1819)

by Elissa H. Janke

An excerpt from Masters Thesis entitled "The Effect of stream and lake habitats on the shell morphology of Lampsilis radiata luteola (Lamarck, 1819) with a review of the use of shell growth lines as an aging technique."

Freshwater clams, called unionids, exhibit distinct lines on the surface of their shells (Figure 1). These lines are thought to result from overlapping of shell layers. The unionid shell is composed of three main layers: a thin outer periostracum (protein layer), a thin prismatic layer (calcium carbonate prisms), and a thick nacreous or "mother-of-pearl" layer (Figure 2; Coker et al., 1919). These surface lines are thought to be due to duplications of the periostracum and the prismatic layers (Isely, 1913).

These duplications are hypothesized to form annually during late autumn and early spring as growth undergoes "starts and stops" when environmental conditions, such as temperature, fluctuate. More specifically, when growth starts again, new deposition of periostracum and prismatic layers begins beneath the trailing edge of the previous deposition. The result is a layered effect of the darkly pigmented periostracum layers which produces the appearance of a line on the shell surface. A greater number of starts and stops of growth should produce a darker line on the surface. Annual lines, as the surface lines are called, have been found to be very useful for age, growth, and environmental monitoring studies (Day, 1984).

A problem with growth line studies is the presence of false annual lines which are other prominent lines on the shell's exterior that form in response to random environmental disturbances. False annuli may be mistaken for true annuli. One objective of this study was to investigate the microscopic appearance of true annual lines, interannular areas, and false annuli, through examination of shell thin sections.

Fifty thin sections were prepared from shells of *Lampsilis radiata luteola* (Lamarck, 1819). Ink marks were placed on the thin sections at locations judged to be true annuli (Figure 1). Shell areas between annuli were expected to show a generally uniform thickness and uninterrupted growth of the periostracum and prismatic layers. Conversely, true annual lines were expected to show duplications of the periostracum and prismatic layers, or what I call "shell growth disruption layers" (Figure 2).

Microscopic examination of the thin sections supported the expectations. Annual lines usually showed clear, sometimes quite dramatic, growth disruption layers. Also noticed was a line extending internally from the periostracum, through the nacre, to the umbo. This line was grayish-blue compared with the yellowish color of the nacre. Interannular areas usually lacked both growth disruption layers and an internal blue line (Figure 3). Most false annuli showed only slight growth disruptions and lacked an internal blue line. Some internal lines thought to be false annuli, however, showed both characteristics. Further research is needed to establish clear criteria for differentiating true from false annual lines in *Lampsilis radiata luteola*, and in molluscan growth lines in general.

Thanks to the Conchologists of America for funding the thin sectioning portion of this study, to Dr. David H. Stansbery for granting permission to utilize the unionid collections of The Ohio State University Museum of Biological Diversity, and to those involved in collecting the specimens: Dave Berg, M. Burleson, J. Ditmars, David Garton, Wendell Haag, James Sears, J. Sprinkle, David Stansbery, and Carol Stein.

300 Wood Street, Mansfield, OH 44906

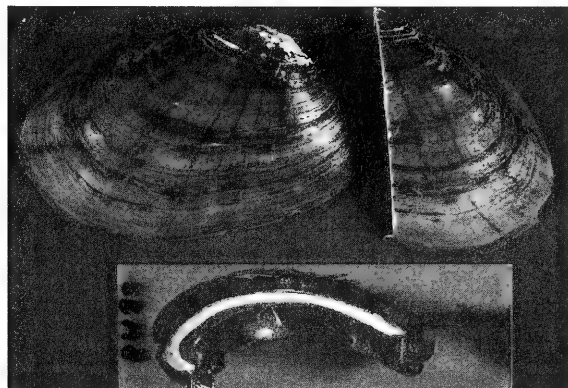


Figure 1. Shell and thin section from specimen of unionid *L. r. luteola*.

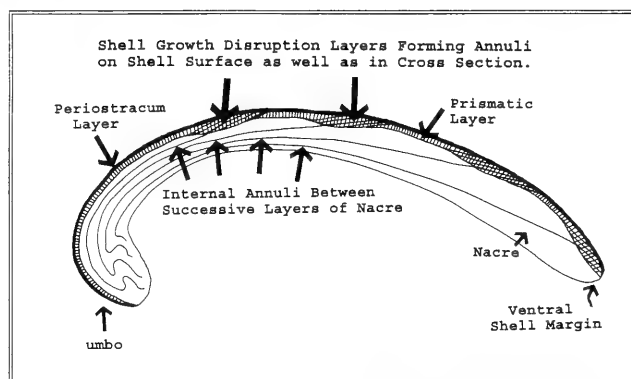


Figure 2. Diagrammatic representation of a thin section prepared from a unionid shell.

Figure 3. Photomicrograph of portion of unionid shell thin sections between annual lines.

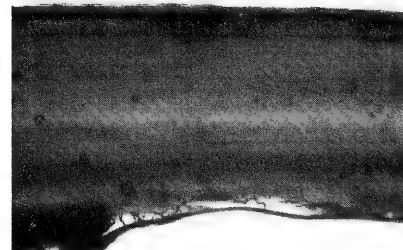
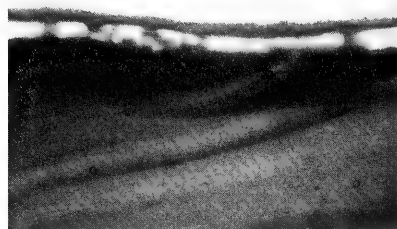


Figure 4. Photomicrograph of annual line from thin section of a unionid shell.



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SAN DIEGO REVISITED — Heroes and Sheroes

by Linda Brunner, Secretary, Conchologists of America

The emerald-paned Pan Pacific Hotel in downtown San Diego was the site of the 23rd Annual COA Convention. And what a convention it was! From the beginning of early registration on Friday, June 23, until the tidepool shelling trip on Thursday, June 29, the gathering was packed with activities and a lot of new ideas.

Speakers took us globetrotting from Alaska to Rapa Nui, Samoa, Southern Australia (literally down under Down Under), the Philippines, Hong Kong, South Africa, Europe, the Caribbean and Argentina. Betty Jean Piech gave helpful hints for shelling and Ron Voskuil put us on the cutting edge of computer management of collections. Terry Gosliner gave a thought-provoking talk on evolution — slugs from snails. That's right — the ancestors of that slimy slug in your garden may have had a beautiful shell during the Precoa (pre C.O.A.) Period. Michael Small moderated a provocative panel discussion that incited COA members to take their first formal action regarding current environmental legislation.

The San Diego Shell Club provided wonderful options for different activities. There was a three-hour dinner cruise on San Diego Bay and a chance to see live *Nautilus* and other interesting marine life at Scripps Aquarium. The rest of the time you could fossil, search for terrestrials, or collect from tidepools. With silent auction bargains, the Bourse with its dealers old and new, the Auction, and fantastic shopping opportunities within walking distances, there was something for everyone.

And now to this article's subtitle. This convention brought out people of extraordinary ability and perseverance. What follows is a list of these heroes and sheroes (a hero of the female sex — heroine, if you will). Hats off to chief hero and shero, **Kim and Linda Hutsell**, for their untiring devotion to COA through preconvention planning to smilingly answering hundreds of questions during the convention. To **Ben and Josie Wiener** for travelling from Florida to reclaim their position as raffle ticket hawkers. To **Gary Rosenberg** for drafting a position statement on the importance of amateur collectors to scientific knowledge and monitoring of the environment, which was approved by the membership (see p. 23 of this issue.) To **Michael Small** for conducting an orderly discussion on an emotional issue. To **Anne Joffe** for her concise, intelligent statement on the evolution of the Sanibel shell ban. To **Don Pisor** and strong friends for their display of huge shells. To **John Jackson** for mastering the ceremonies of the week. To **Dave Green** who ran a superb COA Reps meeting. To **Linda Koestel** for a succinct business meeting. To **Ruth Ann Sparlin** who, as acting parliamentarian, kept us orderly and legal. Finally, to the members of the **San Diego Shell Club** for an innovative convention. And to those other unrecorded heroes and sheroes who, unrecorded but not unappreciated, gave extraordinarily of themselves to make a great convention even better.

In conclusion, COA welcomes the following to the COA Board of Directors: **Bud Rogers, Finance Director; Mary Owen, Treasurer; and Dr. Gary Rosenberg, Educational Grants Director.** We are grateful for the work of their predecessors, **Al Chadwick, Walter Sage, Dr. R. Tucker Abbott, and Horatio Buck** (outgoing Trustee — we now have only one Trustee, so he was not replaced), and will miss each one.

See you at the **Tradewinds in St. Pete Beach in '96** and on **Captiva for the Silver Anniversary Convention!**

Kim and Linda Hutsell, chief hero and shero, seated at their bourse table.

Photo by Chris Takahashi



John Jackson, Convention Master of Ceremonies, adjusts the mike for Author, speaker and world-traveller, Tom Rice.

Photo by Dave Mulliner



Jean Roe, COA Trustee, dips into a net of veggies at the Welcome Party.

Photo by Dan and Hiroshi Yoshimoto



Winston and Elizabeth Barney, resplendent in their matching shell shirts, at the Welcome Party with Doreen Chadwick.

Photo by Dan and Hiroshi Yoshimoto

1996 NOMINATING COMMITTEE ANNOUNCED

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1120 Makaiwa Street
Honolulu, HI 96816

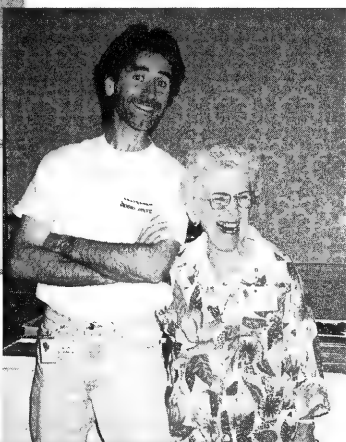
Travis Payne
2703 Wayne Circle
Decatur, AL 35603-9392

Barbara Elliott
18100 Wild Pepper Court
Punta Gorda, FL 33982-9686



Don Pisor, Convention Co-chair. Your group did a fabulous job, Don!

Photo by Dave Mulliner



Yes, Betty Jean, this might be another short joke!

Photo by Chris Takahashi



New COA Financial Director Bud Rogers, left, can't seem to make up his mind which book to bid on in the Silent Auction. It's for a good cause, Bud. Bid on everything!

Photo by Hiroshi and Dan Yoshimoto



The four "Conservation and the Future of Shell Collecting" panelists, from left, Jim Brunner, Bob Fenner, Dr. Terry Gosliner, Dr. Gary Rosenberg.

Photo by Dave Mulliner



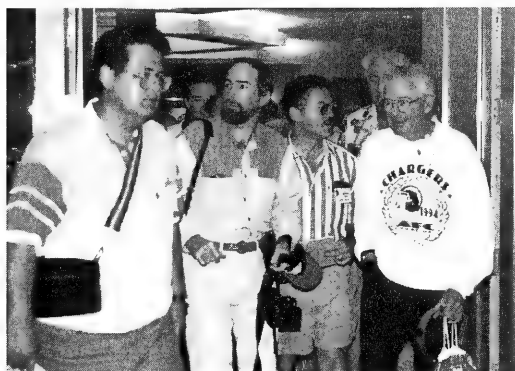
COA President Linda Kostel and her lighthouse: "You don't want to be pestered, perplexed, pawed... paisleyed!?"

Photo by Rosalie Taylor



Kay Klaus, San Diego Shell Club President, at the bourse.

Photo by Dave Mulliner



The Starting Gate at the Bourse: Don Shasky leads Rich Kirk by a head on the inside, while the field is going wide. That's Travis Payne, moving up in the pack.

Photo by Dave Mulliner



A spectacular bourse display covered with bivalves. Wonder whose table that is?

Photo by Jordan Star

Why, Dave Mulliner, we hardly recognize you on the other end of the camera! Dave was convention photographer.

Photo by ???



Dealers at the Bourse: Australian newcomer Simon Barbour from Down Under; Maria Angioy of La Conchiglia, from Italy; and Horatio Buck all the way from Georgia by Buckboard!

Photo by Chris Takahashi

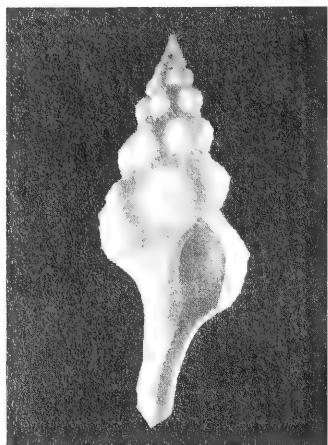
At the fossil dig: Looks like someone pestered, prodded or plaided (plaided?!) the President, and she sat down on the job! Was it you, Doris?

Photo by Rosalie Taylor

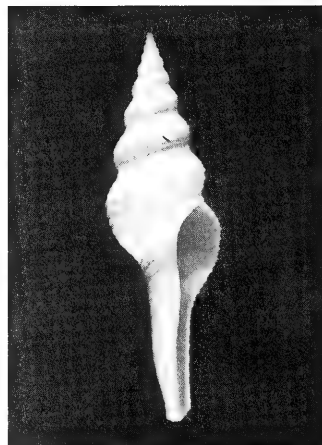
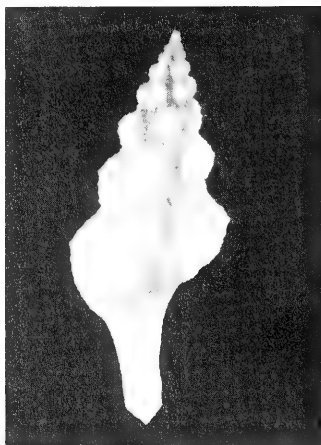


WESTERN ATLANTIC FUSINUS

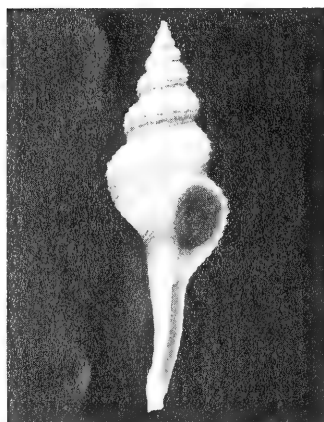
by Kevan and Linda Sunderland



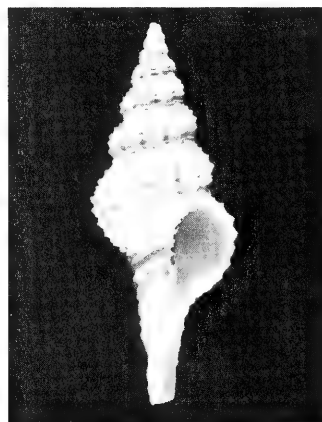
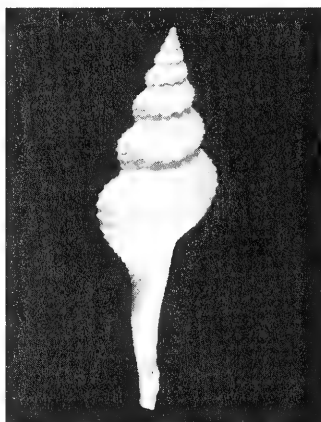
**Fusinus* (= *Latirus*) *ceramidus* Dall 1889. 47mm. 500', off St. James, Barbados. ex. Finn Sander Coll.



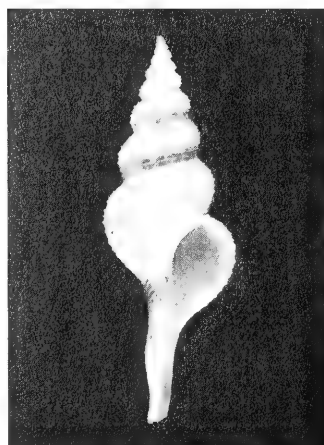
Fusinus couei Petit, 1853. 66mm. 200', off Yucatan Peninsula, Contoy Light, Mexico.



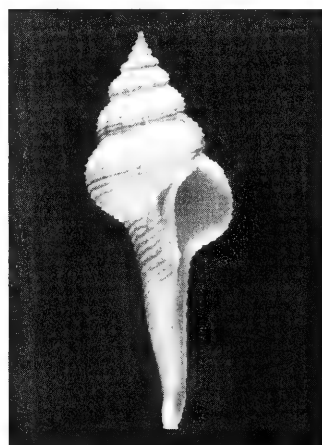
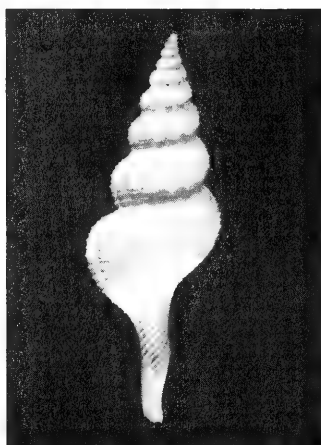
Fusinus frenguelii Carcelles, 1953. 48mm. 60 fms., off Rio de Janeiro, Brazil.



**Latirus* (= *Fusinus*) *hartvigii* Shuttleworth, 1859. 58mm. Off Cow Pot Bay, St. Thomas, Virgin Islands.



Fusinus lightbourni Snyder, 1984. 59mm. 200 fms., 1½ mi. off St. David's Island, Bermuda.



Fusinus lindae Petuch, 1987. 103mm. 200', by scallop boat off Cape San Blas, FL.



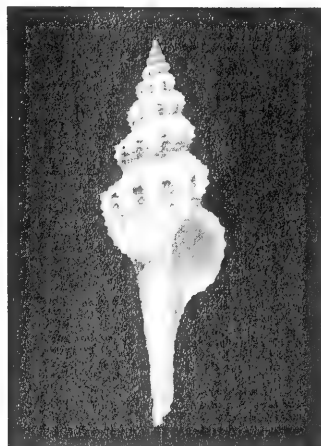
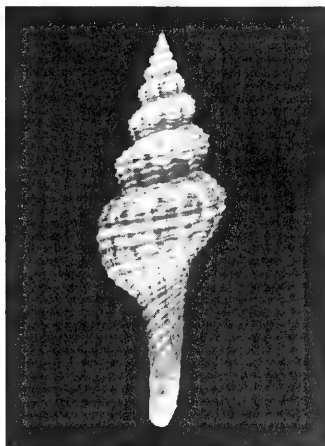
* *Fusinus ceramidus* appears to be *Latirus*, not *Fusinus*. By the same token, *Latirus hartvigii* is *Fusinus*, not *Latirus*.

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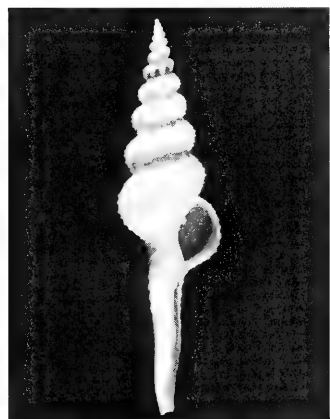
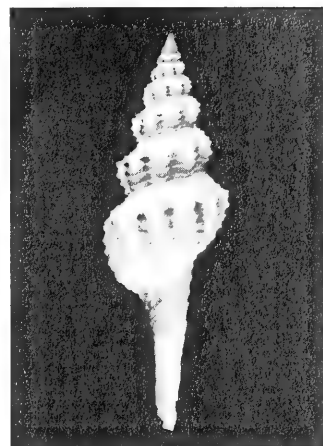
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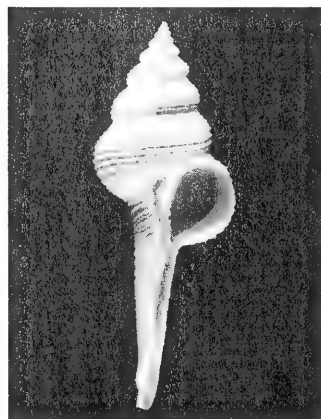
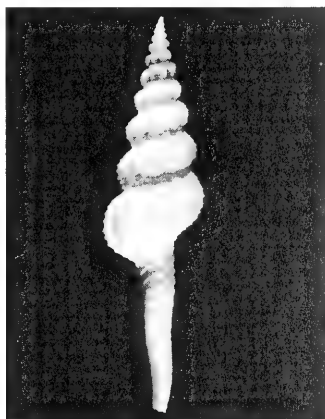
Fusinus marmoratus Philippi, 1846. 72mm. 60', Bahia State, Brazil.



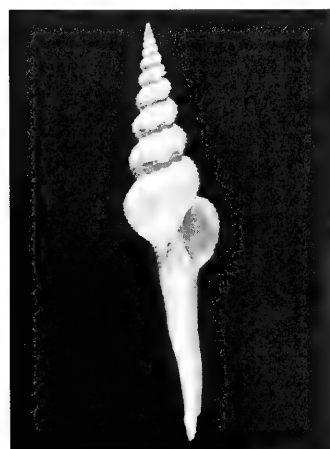
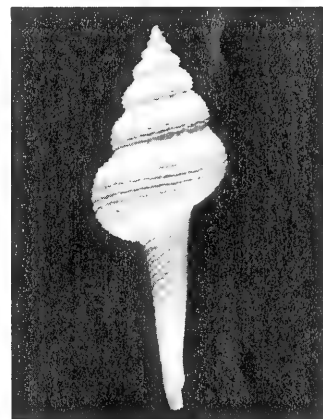
** *Fusinus marmoratus* (= *F. brasiliensis* Grabau, 1904). 72mm. 60', Bahia State, Brazil.



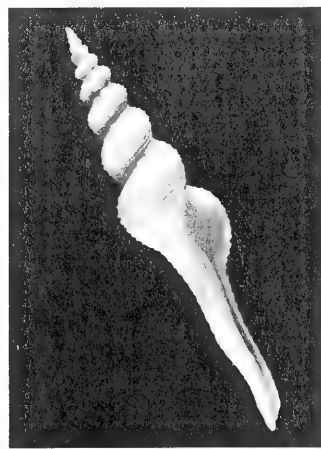
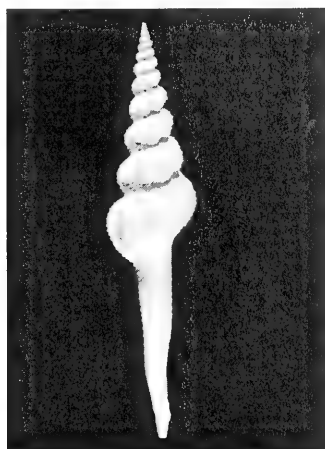
Fusinus stegeri Lyons, 1978. 88mm. 110 fms., west of Fort Myers, FL.



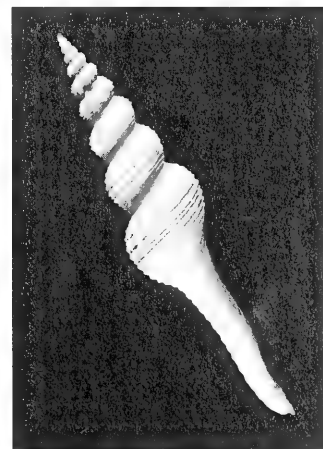
Fusinus timessus Dall, 1889. 118mm. 200', off Key West.



Fusinus species. 132 mm. 140 fms., Cumane, Venezuela. ex: Finn Sander Coll.



Fusinus species. 149mm. 150 fms., San Salvador, Brazil.



Rios, E. C. 1985. *Seashells of Brazil*.
Snyder, M.A., 1984. *Fusinus lightbourni* (Gastropoda: Fascioliariidae), a new species from Bermuda." *The Nautilus* 98(1).

** *Fusinus brasiliensis* is the same species as *Fusinus marmoratus*, *marmoratus* being the senior name.

Report on the Convention Panel Discussion: CONSERVATION AND THE FUTURE OF SHELL COLLECTING

Probably the most successful program of the San Diego convention, in terms of compelling interest to all the membership was the panel discussion on conservation legislation and its impact on shell collecting. The panel was organized by John Jackson, a member of the San Diego Shell Club and Master of Ceremonies for Convention, and Michael Small, our only COA member from Mexico, who also happens to be the Canadian Ambassador to Mexico. Michael ably moderated the panel presentation and also the question, answer and opinion session at the close of the presentations. The panelists were Dr. Gary Rosenberg, Dr. Terry Gosliner, Bob Fenner and Jim Brunner.

The first speaker, Dr. Gary Rosenberg, is a long time COA member and Assistant Curator of Mollusks at the Academy of Natural Sciences at Philadelphia. With a B.A. in Geology and his Ph.D. is in the field of Evolutionary Biology, he has done research on ovulids and costellariids, as well as the evolution of terrestriality in prosobranch mollusks. He is perhaps best known among amateurs for his recent book, *The Encyclopedia of Seashells* (1992). His presentation:

"As environmental awareness increases throughout the world, shell collecting is often viewed as politically incorrect. But is shell collecting environmentally incorrect? I will argue that it is not, for two reasons: 1) the impact of shell collecting on molluscan species is far less than the impact of habitat destruction or commercial fisheries. 2) Shell collectors, because of their collecting activities, are in position to notice and document declines in molluscan populations.

"*The Conservation Biology of Mollusks* (1995, Occasional Paper of the IUCN Species Survival Commission No. 9, edited by E. Alison Kay) lists 29 regions that by the mid-1980s had some form of legislation controlling collecting of marine mollusks: Australia, Bahamas, Belize, Cayman Islands, Djibouti, Egypt, Fiji, Guam, Hawaii, India, Israel, Kenya, Madagascar, Mauritius, Netherlands Antilles, New Caledonia, Oman, Palau, Reunion, Seychelles, South Africa, St. Lucia, Sudan, Turks & Caicos, United States, Vanuatu, and Venezuela. Some restricted collecting of all mollusks, some restricted commercial exploitation of only a single species. Since the mid-1980s, several additional countries have restricted shell collecting.

"In order to understand the impact of shell collectors, we need to know how many shells they collect. I estimate that there are about 10,000 serious shell collectors worldwide, meaning people who acquire shells by self-collecting, trade or purchase, learn scientific names of shells and maintain locality data with their specimens. (There are almost 200 shell clubs worldwide, according to Tom Rice's list, and if each has about 50 members, then 10,000 shell collectors is a reasonable estimate.) The largest private shell collections range from 100,000 to 1,000,000 specimens; typical collections range from 1,000 to 10,000 specimens. If we take the average collection as 10,000 specimens, times 10,000 collectors, we find that there are about 100,000,000 specimens in private collections worldwide. This is about the order of magnitude in U.S. museums. If we assume that the average collector is active 20 years, then 5,000,000 specimens are acquired per year by these 10,000 collectors. Not all of these are live collected; some are recycled from old collections, and some are by-products of commercial fisheries (e.g., lobster nets in Japan, Colombian shrimp boats, scallop boats in the eastern U.S.), and so would have been killed anyway. On the other hand, a large number of specimens that are collected for sale as specimen shells are discarded as

unsalable because of flaws, so we'll stick with the 5,000,000 specimens per year as a rough estimate of the worldwide demand for specimens shells.

"How does this compare to the harvest of commercial fisheries? The *FAO Yearbook* (volume 71, Food and Agriculture Organization of the United Nations) tallies 7,655,000 metric tons of marine mollusks harvested in 1990. Less 2,355,000 metric tons of cephalopods, this comes to 5,300,000 metric tons, or more than 5 billion kilograms (11 billion pounds) of shelled mollusks. If an average mollusk weighs 0.1 kg., then more than 50 billion mollusks are harvested by fisheries each year; 10,000 times more than shell collectors take. In terms of biomass, the ratio is greater still, since commercially fished shells are larger on the average than specimen shells. Even if these numbers are off by a factor of 10, the fact remains that commercial fisheries are far greater in impact than specimen shell collecting.

"The worldwide demand for shellcraft items is harder to estimate. Several shell dealers have told me that bulk shells for shellcraft, jewelry and decor are a much higher-volume, and more lucrative business for them than specimen shells. *The Conservation Biology of Mollusks* notes that the export of capiz shell (the windowpane oyster, *Placuna placenta*) from the Philippines alone in 1986 reached 4.5 million individuals. The effects of habitat destruction are even harder to estimate. However, many mollusks live at population densities of thousands per square meter (e.g., *Batillaria minima*). A shopping mall the size of a football field built on a former estuary can easily kill millions of mollusks. Even natural forces, such as a single winter storm at the New Jersey shore can cast millions of mollusks on the beach to die.

"Overall then, the effect of shell collectors is much less than the effect of commercial fisheries, habitat destruction, natural forces, or shell craft. The problem with this argument is that there is no such thing as an average species. Some species are rare, some are common, some are widespread, others are narrow endemics, some have planktonic larvae and produce millions of offspring per year (e.g., oysters), others have direct development, with only a few young hatching per year (e.g. *Achatinella*). Even though the overall effect of shell collecting is small, there are species, particularly of land and freshwater mollusks, that could be threatened or driven extinct by injudicious collecting, just as others are abundant enough to support enormous commercial fisheries. Populations of some species, such as *Strombus gigas* and *Tridacna*, have been greatly reduced in some parts of the world by overfishing, but there is no evidence that any marine mollusks have ever been threatened by shell collectors alone. Blanket bans on shell collecting are not needed to protect mollusks. Bans on habitat destruction and collection of particular species, along with good management of commercial fisheries are far more important.

"Although we might be reassured that shell collecting is not in itself environmentally incorrect, it is essential for the future of conchology that we counter the perception that it is politically incorrect. The problem is not just misguided bans on shelling, but declining membership in shell clubs and interest in the hobby in general. Most of the people in this room are over 40 years old. Where will the next generation of shell collectors come from? One way to address these problems is to emphasize the potential for environmental contributions by shell collectors.

"Throughout the country, mollusk faunas are poorly known. For example, the shells of the New Jersey shore, within a few hours drive for tens of millions of people, has been ignored for

years. Museums have few specimens from New Jersey collected in the last 50 years, because everyone assumes that the species are common and widespread, yet there has never been a comprehensive scientific paper on the mollusks of New Jersey. What if species have gone extinct in New Jersey, or expanded their ranges from farther south? Changes in the fauna might reflect changes in global climate, yet nobody seems to be looking. By starting projects to document local faunas, shell clubs can not only help to safeguard mollusks and their environment, but also become more visible in their communities and attract new members."

The Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103-1195

Dr. Terry Gosliner, the Senior Curator of Invertebrates at the California Academy of Sciences was second to speak. His presentation is not available at this time, but we will print the text of it in a future issue.

Bob Fenner, a California marine tropical fish specialist with degrees in zoology and fisheries, has 30 years experience in the pet industry, writes for the diving and pet industries on aquarium techniques. After showing some slides of the animals he sells, Mr. Fenner briefly discussed the use of cyanide in the capture of tropical marine fish, saying it was limited to the Philippines and Indonesia, that it had been outlawed there, as well as in the U.S., that there were now assay tests to determine if fish had been exposed to cyanide, and that the only way, despite the illegality of the practice, to discourage its use is to be good consumers and demand cyanide-free fish. Marine fish exposed to cyanide will die immediately or later of the poison. . . its effects are irreversible. (So too, it is speculated, will the native peoples who may eat the fish they poison!)

Mr. Fenner then discussed the anti live-specimen movement from the point of view of his hobby/business. The fish-pet trade has been under serious attack for a longer period than has shell collecting, partly because it does such large and noticeable damage to habitats. It is probably a large part of the reason we are under attack. But it is also "cleaning up its act" and organizing to fight encroaching restrictive legislation. Some of Mr. Fenner's presentation is condensed below. Read "mollusk" for "fish," "shell trade" for "pet trade" and you'll see we're fighting similar problems:

"The fact that gathering and displaying organisms from wild environs is, to some degree, destructive, cannot be disputed. . . . The real question is: how much easily sustainable/repairable damage is done, and really, "Is it worth it?" This last question is critical to all intelligent consideration of our actions and lack thereof; what is the "cost" of doing nothing, and alternatively, what other activities impinge and impact on our marine environment?

" . . . I have been fortunate to travel around the world as a consequence of my involvement in the trade. . . and have yet to witness any real outright destruction as a direct consequence of the ornamental livestock trade; unfortunately, the same cannot be said for other human activities. Development, tourism, food-gathering, military, and other uses/abuses are rife with examples of environmental degradation. . . . Allow me to elaborate on the cost of doing nothing. There are folks who believe that the world would be a better place for making humans leave nature alone. While there are definite needs for protection of large areas of natural lands, most of these negative approaches are unwarranted, naive, inaccurate, and hypocritical.

"What is the cost of denying the public access to the natural world? Is an uneducated, uninformed populace better adjusted, more sensitive to environmental and science issues? Of course not! The argument that it is worth it to destroy a few organisms in efforts to enlighten and entertain people has been advanced as explanation, rationale, and justification for the taking of livestock for display or ornamental purposes. I am in agreement with this.

"I am compelled by the force of logic to bring up the alternative hypothesis. . . the other sources of mortality. . . . The types and amounts of wastes poured directly and indirectly by the militaries of the world into aquatic environments every hour is vastly more destructive than a year's worth of collection of livestock. Anchors dragged by diving and fishing ventures, direct and ancillary damage by the curious and just the sheer weight of travel, eating, accommodation use and support. . . these influences are far more damaging than collection of pet fish.

"So why the big squawk regarding the pet trade? Who is it that stands to gain by promoting so much bad press? The various public agencies that stand to be cut by shrinking government budgets, and various "nature" groups that generate revenue via inflammatory declarations? How can they hope to sell their ideas to individuals and groups without sensationalism? And how much money are they going to get attacking the tourist and governmental sources of waste and inefficiency?

" . . . Thus my thoughts and feelings on the issue of the impact . . . of personal and public use of aquatics. Environments and livestock barely suffer as a consequence. Instead, there is a real gain in awareness and subsequent enjoyment and protection as a result of gained awareness. Alternatively, there is tremendous destruction by casual tourists, development, and military practices, although these are not as visible or as popular to illuminate and attack.

" . . . My advice to you is to stay informed and vocal.

"I will gladly admit my background and vocation. I have lived the pet fish trade in Japan, the Philippines, and the United States for the last thirty years, interspersed with a four year stint teaching high school sciences. It might be argued that I am merely protesting the pending further restriction of my trade, but I warrant against this. It is because of my background and involvement in aquatics that I know of the valued interests and of the keen regard that hobbyists and most people in the trade have for the living world. We have been on the vanguard of promoting and enhancing appreciation of nature and will remain there.

"Thank you."

10251 Thanksgiving Lane, San Diego, CA 92126

Jim Brunner, the final speaker, is a member of the Gulf Coast Shell Club in Panama City, Florida, and editor of its newsletter, Shell and Tell. Jim teaches high school mathematics and philosophy, and has been a shell collector for 20 years. He and his wife Linda are exhibitors to reckon with on the annual Shell Show circuit, and were co-chairpersons of the very successful 1993 COA convention in Panama City. Left to pick up the threads of the previous three presentations and draw them together in conclusion, Jim spoke extempore:

"I had three carefully prepared pages of notes that I was going to talk from, but in listening to these other panel members, I realized that we were all saying the same thing. So let me discard these notes and try to speak frankly.

"We are in trouble! I have the terrible feeling as I look out over this group that I may be looking at the last generation of

(Continued on page 21)

Report on the Convention Panel Discussion (Continued from page 21)

shell collectors. I know that if, twenty years ago, I had to get a series of permits to be able to collect shells, I would have taken up stamps, or coins, or old door knobs — anything that would be easier.

"I ask you to reflect for a moment on how much pleasure this hobby has given you over the years, how much you have learned and grown. Well, this reward doesn't come without a price, and that price is an obligation to the future of shelling and this organization, COA.

"Now what is the problem? One thing it is not is that shell collectors are being singled out as some sort of species-eliminating villains. No, the real problem is that, in the eyes of this process, we don't even exist! We are too few in number and have too small a voice to be noticed. And as a result we are overlooked in the process. Therefore, the thrust of our efforts in the future should be to overcome this cloak of invisibility and present ourselves in accordance with the philosophical foundations of the Conchologists of America."

After the convention, Jim Brunner synthesized what he had heard there, both on the panel and in earnest conversation among convention participants, his opinions, and some previous experience. Here's what he decided:

DEFINING THE PROBLEM

by Jim Brunner

Much of the talk at the San Diego COA Convention centered around the problems being created by ever more restrictive limitations on shelling around the world. In the early stages of the convention the talk had an "us against them" tone; some were against the conservationists, others against the regulatory community, and a third group took the opposite view, one generally in favor of realistic regulation of truly endangered species. It was obvious that the convention attendees were anything but united in their views.

There is a shelling story that has passed into legend status regarding the events that took place when the second *Conus gloriamaris* arrived in Europe. The owner of the first arrived at the auction where it was being offered and paid an exorbitant price for it. He then threw it to the floor and smashed it, declaring that he once again had the only specimen of this precious shell. Such an attitude — "Let 'em ban collecting or destroy the habitat; I got mine!" — is thankfully not very common today. No shell collector I've ever talked to wants to see a species go out of existence or see a habitat so degraded that species must struggle to survive. If you subscribe to this point of view you should realize that this makes you, by definition, an environmentalist.

On the other hand, shellers tend to be individualists — it probably comes from all those long walks in a stooped position. As such, they don't like to be told where they can go or what they can do when they get there, particularly if getting there costs big bucks. The limit-setters are various regulatory agencies at the local, state and federal level — organizations responding both to actual threats to the natural environment and to perceived threats generated via political pressure. So, limitations on, say, scallop collecting can range from carefully thought out limitations on Bay Scallops in an effort to create a sustainable fishery to blanket bans on all collecting or, as in Florida, a ban on nets over a specific size, the results of political expediency rather than good science. Nowadays it is increasingly fashionable

to be "environmentally sensitive" or to at least make use of the terminology to disguise your own agenda. Such maneuverings generally do not sit well with shellers and, if you are one who finds such activities reprehensible, you might find yourself labeled as "anti-environmentalist."

I know what you're thinking. These two views (which represent the only options available in the current argument) do not adequately describe the real desires of the shell collector. We seem to be somewhere . . . **in between**. Recognition of this single point is essential for understanding the dilemma now facing shelling. We are indeed **in between** the diametrically opposed points of view that define the regulatory process. And this highlights several problems:

1. With lines so clearly drawn (you're either for or agin') it is difficult if not impossible to stake out a middle ground that will allow the continued collection of shells by amateurs for scientific and aesthetic reasons.

2. Shellers, as a group, are so small that they are invisible to the process. In the argument, **we do not exist** as a factor worthy of consideration.

3. Even if we can make the regulatory process aware of us, they have no expertise in dealing with entities that have neither commercial nor strict environmental goals. They don't know what to do with us; thus, like all good bureaucracies, they ignore us.

The danger here, obviously, is that we will simply be shunted off to the side as the debate continues and more and more limits are placed on our hobby. So how do we handle this? What do we have to do to make our viewpoint known and respected? The answers to these questions will be the basis for considerable debate among the shelling community.

A necessary first step will be to arrive at a philosophical position for the shelling community. All of us have questioned aspects of our hobby. The matter of collecting live animals for no other reason than to retain the shell may have caused some qualms. Can we honestly say, in our hearts and minds, that our actions are a positive good that poses no danger to the molluscan population and, indeed, serves to protect them through responsible collecting practices? Exactly what impact do we have on various species? These are questions that each sheller must answer individually and we, as a group, must answer collectively. Why? Because it is far easier to support a position you believe in than one that rings hollow. At the San Diego Convention Dr. Gary Rosenberg made the conservative estimate that of the trillions of molluscs spawned each year approximately 50 billion are harvested by man. He added that if each of his estimated 10,000 collectors acquired 500 shells per year (for a total of 5 million) this would only equal .01 of one percent of man's harvest. Such a statistic suggests that our impact is minimal. Much more data of this type is needed for the struggle ahead.

Yet all of this is merely a precursor. The true fight will involve staking out that middle ground position and making it recognized and respected by the regulatory establishment. What will be involved in this? What actions should be taken? You are the one who has the answers to these questions. A free and open exchange of ideas is needed. Let us know what **you** think.

CONCHATENATIONS

by Gary Rosenberg

Readers of *American Conchologist* should be aware of growing concern about increasing regulation and even outright bans of shell collecting in various parts of the world. That concern led Michael Small to organize a panel discussion for COA's annual convention on the subject and the related issues of molluscan conservation. The membership was strongly interested in these matters, which led to the adoption of the resolution on scientific collecting featured on the back cover of this issue.

As the author of this resolution, I'd like to summarize some of the debate on wording and intent that occurred when it was adopted, and mention some thoughts that have occurred to me since then. Because so many people have discussed the resolution with me, I have not been able to keep track of who raised which points, but I do thank everyone involved for their interest and incisive comments.

The first question that arose from the floor concerned the choice of the word "amateur." There is really a continuum between amateurs and professionals. Some people are professionals in the sense of being currently employed to study mollusks, others because they have a degree, and some because they publish scientific papers on mollusks. Every possible combination among these three criteria can be found among COA members. There already is an organization that speaks for the interests of professionals, the American Malacological Union, and professionals can usually get permits for collecting for research. By amateur, then, I intend to focus on hobbyists, shell collectors, those who study mollusks as an avocation, because this is the group most affected by regulations on shell collecting.

People were concerned that the phrase "scientific collecting" excludes collecting for artistic or aesthetic purposes. Certainly appreciation of the beauty of shells is as valid a reason to collect them as is interest in studying their habits. By scientific collecting, I do not mean only formal sampling regimens and controlled experiments. I mean the awareness to make and communicate observations about mollusks. Shells in themselves do not have scientific value, but observations about them do. The artist picking up shells along a local creek might be the first to notice that the population is declining or that the habitat is being polluted. A self-trained naturalist might be the only one who has documented the fauna of a local estuary, by saving specimens labelled with place and date of collection.

There was also concern that legislators might misinterpret "scientific collecting" to support the activities of scientists to the exclusion of those of the hobbyist. Things can be misinterpreted, of course, no matter how carefully one phrases them; in this case, "amateur naturalists" in the preceding clause should help clarify the intended sense of "scientific collecting." Also, the resolution is a starting point, not an ending point; it is a position statement, not a piece of legislation. Explanatory material should accompany it, and I hope that it will become part of COA's continuing efforts to educate about mollusks.

I should emphasize that "scientific collecting," "observation," "beauty," and "art" have always been within the purview of conchology. The term "conchology" was introduced to English by Emmanuel Mendes da Costa in 1770, in *Conchology, or A Natural History of Shells* and elaborated in 1776 in his *Elements of Conchology*: "This peculiar branch of the History of Nature, I shall call Conchology. It comprehends the study of all animals that are testaceous, or have shell coverings; not only those of the

Sea, but also those of the Rivers and Land" (p. 2). I had not read da Costa's works at the time I presented the resolution, but his words prove apt: The *scientific collectors*, or naturalists, are always desirous of having the Shells in their rough state, or just as they were fished. . . . I would advise all collectors to have some Shells of each genus in their rough state, while the others should display their *beauties* by all the accomplishments of *art*. . ." (pp.71-72, emphasis added). Da Costa also stressed the importance of observation: "When any Shells with their fish [i.e., animals] are collected, I would not have them immediately killed, but keep them for a few days in their native sea water. . . to make observations, if possible, of their motions, ways of life [etc.]" (pp.64-65), and he further advised "to enrich your cabinet with specimens for knowledge, as well as for beauty" (p. 72).

From da Costa's words we can see that the scope of conchology has changed little in more than 200 years. Conchologists are still captivated by the beauty of shells, and still add to knowledge of them. But the traditions of conchology are now threatened by increasing regulations, regulations that often mistakenly blame collectors for the ravages of habitat destruction and that lump the activities of shell collectors with those of commercial fisheries. Conchologists need to educate people about their activities, to form political alliances and try to affect legislative processes. This might lead to unusual situations, with shell collectors and COA siding with hunters and the NRA (National Rifle Association) on some issues.

Whatever happens, conchologists and COA cannot afford to remain silent. The general public does not understand what we do, and the collecting of natural objects is increasingly perceived as politically incorrect. As an example, the museum where I work recently had an exhibition of live butterflies. Part of the exhibit was a display where visitors could vote with spare change for one of several propositions about the collecting of butterflies. These were (approximately): A) Butterfly collecting should not be allowed for any purpose, there are already enough butterflies in museums; B) limited collecting of butterflies for scientific purposes should be allowed; C) habitat destruction is what threatens butterflies, collecting is okay; D) there are so many butterflies that the impact of collecting is negligible; E) don't know; F) don't care. Despite the exhibit's pointing out that many more butterflies are killed by cars every year than by collectors, Proposition A won.

Shell collecting might be easier to promote than butterfly collecting; after all, people are used to eating mollusks, and live butterflies have more public appeal than dead ones, whereas the reverse is true of shells. Still, we need to stress the environmental and educational aspects of conchology. As I noted in a previous column, shell-collectors, because of their collecting activities, are in a position to notice and publicize the effects of habitat destruction and degradation. One way to keep our hobby healthy is to expand the role of conchologists as monitors of species and environments. Let us take the traditional role of observer of nature and show that the careful observer can also be a protector of nature. COA's new resolution is a first step in this direction.



Flotsam and Jetsam



One of our favorite COA personalities, the witty and indomitable **BETTY JEAN PIECH** is — as well as being a world traveler, a good speaker and great company — a Curatorial Associate at the Delaware Museum of Natural History. In this capacity, Betty Jean has compiled a catalog of taxonomic names for the families Ranellidae and Personidae, including 160 species and subspecies, 220 synonyms, authorities and dates for all species names, and an index and extensive bibliography. The 60 page, 8" X 11" softcover book is edited by Dr. Paula Mikkelsen, Curator and sells for \$12 post paid. It is available from the Department of Malacology, Delaware Museum of Natural History, 4840 Kennett Pike, P.O. Box 3937, Wilmington, DE 19807-0937. It is sure to be a helpful tool for study and arrangement of your collection. Thanks and congratulations, Betty Jean!

TOM RICE is continuing his project of reporting on recently described marine mollusks in *Of Sea and Shore*. In the Spring 1995 number, he pictures 26 taxa newly introduced in 1994, and in the Summer 1995 number he covers 17 species, also from 1994, giving an abbreviated description, comparison to similar species, type locality and the publication in which the description originally appeared. Many of the new species this issue are in the family Marginellidae. We applaud Tom on this laborious undertaking and thank him on behalf of collectors everywhere for doing a much-needed service for the amateur.

THE SHELL DESK DIARY is taking orders for its 36th edition. This 1996 edition will feature the Galapagos Islands. The executive version with the padded, foil-stamped, black leather cover is again available. We're grateful to Robert Ashfield for continuing this tradition, begun so many years ago by the Shell Oil Company. Questions? Call Bob Ashfield at 713-984-7518 or fax 713-984-7576.

THE SANTA BARBARA MUSEUM announces three upcoming publications: *Bivalved Seashells of Western North America* by Eugene Coan, Paul Scott, and Frank Bernard, with descriptions and photos of all species from the Mexican border to arctic Alaska. \$85.00. Winter 1995. Volume 8 and 9 of this

Taxonomic Atlas Series describes the marine invertebrates of the Point Conception region of Southern California. Volume 8, *Mollusca Part 1 - Gastropoda* by James McLean (prosobranchs) and Terry Gosliner (opisthobranchs), and Volume 9, *Mollusca Part 2 - The Bivalvia, Cephalopoda, Aplacophora, Polyplacophora and Scaphopoda* by Paul Scott, Eric Hochberg, Amelie Scheltema, Doug Eernisse and Ron Shimek. \$35.00 each (softbound), available this fall. Paul Scott at the Santa Barbara Museum of Natural History, 805-682-4711 ex. 319, or fax 805-569-3170.

NEW JERSEY has an official **STATE SHELL** as of April 13, 1995 when their State Senate and the General Assembly designated the knobbed whelk, *Busycon carica*, as the State Shell of New Jersey.

Last issue we carried a letter from South African correspondent **OLIVE PEEL** concerning shell trade etiquette and those who cheat on trades. Olive sent an expanded version of her letter to the South African Bulletin, *Strandloper*. Here is the editor, Dr. M. Cortie's reply:

As far as the **Strandloper** is concerned, we print the swap requests in good faith. Olive has supplied some names of recalcitrant people to me and I invite other members who might have had unfortunate experiences to write to me too, with details. If we receive sufficient "bad publicity" about any particular person or organization then we might consider printing further information so that you can be forewarned. . . . As far as swapping goes, I found that it is safest to write to the other party first and establish ground rules, such as whether the material to be swapped must be self-collected, or live-taken, the families that are acceptable, and the type of postal delivery to be used. . . .

We were sorry to read that the new publication **THE COWRY, N.S.** has had to cease publication after its first year because of a lack of subscriptions. Maybe the time just wasn't right for it. So little is published these days about cowries in the United States and its creator, Dr. Jiri Zidek, had such great plans for it, too.



OYSTERS BY THE CHAPTER

We've heard from COA Grant Recipient Dr. MELBOURNE R. CARRIKER at the University of Delaware that the work for which he received his COA grant is completed: *The Eastern Oyster, Crassostrea virginica*, published by the Maryland Sea Grant Program. This comprehensive volume is composed of 21 chapters, each by a specialist on a particular aspect of oyster research. The chapter by Dr. Carriker which COA helped finance is Chapter 3, "The Shell and Ligament." Should you be interested in knowing more about the oyster, its life, loves and larval escapades, write to Merrill Leffler, Maryland Sea Grant Program, 0112 Skinner Hall, University of Maryland, College Park, Maryland 20742, USA and request information on ordering it. Recipes not included.

GENE EVERSON and his shell collection were recently featured in a full-color two-page spread in the Louisville Courier Journal highlighting collectors.

SANIBEL MUSEUM "OPENS" JUNE 27

Although the Grand Opening of the new Bailey-Matthews Shell Museum is not scheduled until November 18, it opened to the public on a "preview" basis on June 27, and is getting 400-900 visitors a day. From 10-4 each day but Monday, the public can visit the Exhibit Hall, where many of the major exhibits are completed. Regular admission is free to members in good standing, and \$4.00 to non-members.



FLOWERS TO:

We were late in hearing that B.J. Larson was quite ill in June. We're sorry to hear that, B.J., and hope that you are much improved — indeed, up and around — by the time you read this.



MUSSEL COLLECTING IN KANSAS — Welcome to the Real World

by Karen Couch

Set Dorothy and Toto aside for a while and consider Kansas anew. Stand waist-deep in the middle of a wheat field on a hot, sunny afternoon. Or watch massive combines work meticulously back and forth over a sea of gold, and then play in the straw left behind — finding an occasional box turtle. See cows winding their way down narrow, well-traveled paths to the watering pond. Experience these pleasures and you will know a different Kansas, a vast natural playground for a child.

Growing up in Kansas, I spent half my childhood in this outdoor wonderland and for a few years my family lived where there was a pond right in the back yard. We were also a mile or less from the Neosho River. Seldom did I go to the river, and never alone. Mom and Dad felt it was too dangerous a place for children. The pond was easily accessible, and there was always something interesting to see and do. Fish, turtles, frogs, tadpoles, snakes, all sorts of insects and snails. I'd find a few mussels in the river and one or two in the pond when the water level dropped. (Who knows what ever became of the shells — certainly they spent a few years in a box under the bed — now, I wish I'd saved them. But from the age of eight on, my interest was in SEA shells. I really thought the river mussels were all alike.) Once I spent 20 minutes watching a brilliant green dragonfly emerge from its nymph wrapping, spread its crumpled wings to dry into transparent lace, and flit away, only to be devoured by a swooping hungry bird within 50 feet. Now THAT was a lesson in the reality of life and death. And once I left a bucket of 3" bluegills together with several 1" baby crayfish. Two hours later the crayfish were nowhere to be found — the fish had enjoyed a crustacean feast. Things never seemed the same after those shocking disappointments. And yet it was a real privilege to witness firsthand some fascinating things others only get to view on the Discovery Channel.

With the passage of time, some things change and others remain the same. The kid who played in the pond is 20 years older now. Endless days of innocent exploration are gone. This story is about the present, and, given my background, it is with a real feeling of loss that I must describe the current situation, particularly with regard to the mussel population of Kansas.

It is well-established that wildlife has been in trouble for decades, but the children of 20 or 30 years ago were not aware of the danger. Even now, with all the publicity about the

devastation of the rainforest, we may not think about what is silently happening in our own back yard — that it is much closer to home. Take notice, the trouble is upon us.

My closer examination began when I met a man at the Kansas State Fair who is not an environmentalist or a biologist, but a TV News anchor from Wichita. He does weekly 3-minute stories of Kansas people with unusual interests. He wants to know what makes us tick — what compels us to do or like certain things. He decided he wanted to do a story about me as one of the few serious shell collectors in landlocked Kansas. Knowing how he did other stories, I guessed he would not be interested in devoting the whole piece to marine shells, but that he would want to include something local. It had been a very long time since I had been out looking for mussels anywhere. Thoughts of doing something with them would occasionally come to me, but somehow any mussel project got put on the back burner. Now seemed like an excellent opportunity.

My husband and I know two families who live in the Flint Hills, and have a creek on their property. I asked if they ever saw any mussels. Yes, they said, three or four different kinds, but not as numerous as 40 years ago. (I wondered why.) They said we could go out any time we wanted. It sounded like fun, a different kind of diversion.

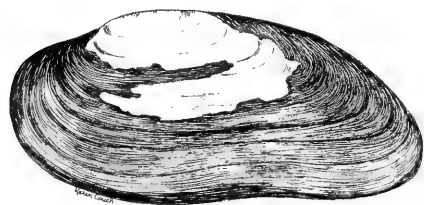
The famous Flint Hills of Kansas once supported one of the healthiest mussel populations in the state. This 40-mile wide strip of beautiful hills stretches from Nebraska to the Oklahoma border, and is characterized by open grasslands with few trees, numerous limestone outcrops, and slopes of flint fragments. West of the Flint Hills, particularly to the southwest, Kansas becomes notably flat — Wizard of Oz country. Our trip was to Chase County, almost exactly in the center of the Flint Hills. Cattle ranches are typical of this area, with only a few pockets of farming. (Later I learned that this is why the mussels are faring slightly better here than in other parts of the state.)

With the 45-minute drive behind us, we walked the short distance to Cedar Creek. This creek eventually empties into the Cottonwood River, one of three main rivers which drain the Flint Hills. It is fed by several springs, one of which we visited on a later trip. The creek has some areas with so little bank that it can be driven over (or through). Other spots had banks cut so deep one had to follow the cow path down, not walking but sliding, feet first, rear dragging — as much as 20 feet down to water's edge!

October/November is an excellent time to go collecting. The water is usually low, noxious weeds are at a minimum, flying insects are scarce, and raccoons have had all summer to dine on mussels and scatter the cleaned shells on the banks and riffles. Filling two grocery bags half-full took little effort — but of course mud on the shells added to the weight of the bags. I picked up the mud-covered shells, thinking all the time that there were only three or four species. My husband walked along pointing out shells — he was not about to spoil my fun by assisting me in collecting. We found all sizes of shells, some with pink and purple nacre. We had a rewarding and fun day, and hardly even got wet. Worn out and in need of a bath, I hauled my treasures home for soaking and scrubbing.

The several authorities on cleaning shells all agree that a long, unrushed soak and a good, stiff brush help immensely. They did. And the shells were all dead, so little or no flesh remained to be removed. Now that all the shells were cleaned, it became obvious that I had more than four species. Eleven. And no books on freshwater mussels in the home library. Nor in the public library.

(Continued on page 26)



Elliptio dilatata (Rafinesque, 1820)

SHELL LENGTH: 127mm



Fusconaia flava (Rafinesque, 1820)

SHELL LENGTH: 113mm

MUSSEL COLLECTING IN KANSAS

(Continued from page 25)

Around the first part of November, the nice news man from Wichita called me to do the TV piece. Sure enough, we went to the creek. He was such an easy person to talk to — I wondered later if he learned more than he wanted to about shells. It was enormous fun. This series airs all over the state, so everyone who watched saw me collecting mussels. And you know what is often said about hindsight. I'll explain shortly.

My full attention now on mussels, I decided I needed to get my finds identified. Instead of blundering, I called upon a good friend in Missouri for help, which she excitedly gave. Not only was she able to ID everything, but she also pointed out to me the extraordinary size of some of the shells, as well as other interesting and unusual characteristics. Well, that really got me going. We had to go back out to the creek. (Who needs a beach?) The weather allowed for one or two more trips in which I found an additional three species — a total of 14 in a half-mile of creek. If at this point you are thinking this is mussel-collecting heaven and are packing your gear, read on. You are in for a surprise.

My friend in Missouri sent me a couple of books and put me on the track of other useful publications. Before long, I was accumulating and reading everything I could lay my hands on about freshwater mussels. I was able to identify my three "new" species myself. Wondering if there might be some recent publications on Kansas mussels, I called the Kansas Department of Wildlife and Parks Operations Office in Pratt, Kansas. They kindly sent me some very interesting and informative survey reports done in 1992. I read that some of the 40 or so mussel species in Kansas are considered endangered, threatened, or in need of conservation. I also learned why this list exists in a state where, I innocently believed, "It can't happen here." Four of my Cedar Creek shells were on the "Species in Need of Conservation" list, or SINC for short. Hmmm.... The 1962 Murray and Leonard **Handbook of Unionid Mussels in Kansas**, still available from the University of Kansas in Lawrence, also proved useful, even though the nomenclature is outdated.

In the meantime, thinking I had gleaned all the pertinent stuff from the KDWP literature. I looked at the names of people who had helped with surveys. One was a Dr. Don Distler from Wichita State University, only 30 minutes away. I called the university and, sure enough, he was still there, in the Department of Biological Sciences. Dr. Distler was super nice on the phone. I told him that I was interested in mussels, that I had some, and I inquired if he would like to see them. Definitely, he would. A week later I was at the lab with my box full of shells, and we talked about mussels for three hours. He liked my shells. What I learned was most profound. He impressed upon me that mussels are indeed in trouble — we'd better enjoy them while they yet remain. Enjoy and study, not exploit and kill. At least I knew my conscience was clear on that one — I never did kill a mussel, not even to look for pearls. It saddened me to know that these unique creatures were having serious problems in what appeared to be a relatively unpolluted area. The 8" *Lasmigona complanata* and 6" *Lampsilis cardium* may become rare finds indeed. Doc, as I later came to call him, had been working on an idea for writing a specific piece on Kansas mussels. He needed illustrations for it. What great timing! We've been busy with it ever since. Doc told me when checking out the mussels in the creeks to pay special attention for evidence of recruitment, that is, juveniles, and not just adults.

But backtracking a little, let's have another look at those Department of Wildlife and Parks survey reports. I have the unfortunate ability to unwittingly open the proverbial "can of worms," no matter what. When I reread the survey reports I

noticed mention of a scientific collecting permit. Permit? For KANSAS? I called the KDWP office in Pratt again. Yes, you certainly do need a permit. Even for dead shells? Yes. Okay, no problem, send me the application. Received. The completed application must be signed by the conservation officer of the county of residence. Aware of our impending move to a different county, I waited until after we were moved and settled. (Doc was upset about the move, but we decided we could still do the work. He encouraged me to make records of what I find where — he wanted to know.)

The only information I was given regarding the conservation officer of my new county of residence was his name and telephone number. No address, but they said he was good. It turned out to be his home phone number. That really helps a person get off on the wrong foot like nothing else can! No way you can redeem yourself from that one. Anyway, the officer gave me the details on filling out the application and provided an office address to send it to. I told him I had already collected mussels the previous year, not aware of the need for a permit. He asked me if they were all identified, and said to send him a list of them along with the application. At this point, most of you might be thinking it was stupid to say anything about having the shells. To that I say, anyone can sneak — it's far more noble to be honest. In this instance, it certainly helped to be honest.

The application required specific information: who I am working for, what counties I plan to collect in, what I will collect (common names only), where the shells are to be housed. In other words, you have to know where you will be in the coming year and what you will find. I filled out the application to the best of my ability. The conservation officer also sent me a list of all the endangered and threatened species and those in need of conservation. The list was composed of common names which I had to translate into scientific nomenclature. Six of the Kansas mussels are endangered, four are threatened, and another twelve are on the SINC list. I guessed I should leave any of those off my application. Correct. I made it perfectly clear that I would only collect dead shells.

After he received my application and list of Chase County shells collected last year, the conservation officer called me. Among other things, he asked me if I knew that four of the species on my shells-collected list were on the Kansas SINC list. I told him that at the time I collected them, the answer was no. He informed me that it is a violation of the law to collect these. Ignorance is no excuse. Something about possession. He said he would have to talk to his supervisor as to what would be done about it. Okay, I said, let me know.

Two or three weeks later, he called me again. He said I had to turn those shells over to him. Today. With directions on how to get to his office, I packed my shoe box with the offending pieces of biodegradable calcium carbonate and took them to the KDWP District Office in Lenexa, just up the road. The conservation officer was waiting for me — uniform, badge, gun, the whole thing. Intimidated? Not exactly — I was still too numb from having just moved, too grief-stricken over leaving my friends behind, and too overwhelmed with the culture shock of leaving a town of 16,000 and moving to a city with a population of 120,000 to be too upset by this.

The officer looked over the shells, but I had only the Latin names of the shells on their labels. I showed him which was which. (It would be unfair to expect law enforcement personnel to use anything but common names, although it might help bridge any gap between them and the biologists/researchers if they could learn to make use of the Latin.) He wrote me a ticket. Misdemeanor violation. Just a warning — no court appearance. He took my specimens of *Fusconaia flava*, *Lampsilis teres*, *Strophitus undulatus*, and *Truncilla donaciformis*. They would be

used in an upcoming ID clinic. I said good, they better not end up in the trash. He said he wouldn't let that happen. He also stated that because I was being so up-front, honest and cooperative, he would approve and sign my permit application. His supervisor had seen the TV thing earlier and wondered if I was the same person. They could have come after me any time they wanted.

That part about possession bugged me. What about the shells Doc wanted to loan me from the university's museum for the illustrations? The conservation officer had already called Doc's secretary to see if he really knew me. Doc had to write a letter explaining what we were doing and that T, E and SINC species would be included in the work. A letter came back from the operations office in Pratt giving us their approval and blessing. My permit arrived at the same time, allowing me to collect legally. A report form of what was collected and where must be mailed in at the end of the year. We conchologists already excel at keeping good records (let's hope!), so this is not too burdensome a requirement.

The conservation officer had also made sure I understood that in order to collect only the species allowed on my permit, I would have to do field identification. That makes sense. A difficult task, but not impossible. From their standpoint, it's narrowed down to twenty species. Not really. Remember, Doc wants to know what I see, to assess range and status. The biggest problem with not being able to collect any species on the Endangered, Threatened or SINC list, even of dead shells, is that biologists will have no voucher specimens. Past instances of lacking voucher specimens have left scientific data and reports subject to question; you can say you saw such-and-such, but without the actual shell to back you up, credibility becomes hazy. Even the experts can make a mistake. With as much study and research as I could muster, I mentally prepared myself for the challenge. Easier said than done. Leaning on the tailgate of a pickup truck with books and shells makes for a humbling experience. But I asked for it.

We went to a creek in Franklin County. The farmer was nearby burning some brush. I told him what I was doing; not only did he grant permission to collect, but he pointed out where the riffles were. Middle Creek, as it is called, runs into the Marais des Cygnes River (The name means "Marsh of the Swans." Did not see any swans.) The creek contained a few species not found in Cedar Creek. Notably distressing was the fact that only very dead, worn shells of *Elliptio dilatata*, *Fusconaia flava*, and *Lampsilis siliquoides* could be seen. All three of these species are on the Kansas SINC list. This particular area is extensively farmed and field run-off is blamed as one of the major causes of declining numbers of mussels.

In fact, recent news reports concerning the Kaw and Missouri Rivers (and others) in northeastern Kansas strongly suggest these rivers are dying. Significant quantities of the chemicals atrazine (from farming) and chlordane (from residual termite spraying) are being found. Warnings are issued not to eat any bottom-feeding fish from these two rivers more than once a week, or at all. How sad. You know it's getting serious when you hear things like this. The mussels in those rivers may well be gone now. Because they are so sensitive to water quality, mussels are considered very important bioassayers of the environment. They're in trouble, we're in trouble. People like me are hardly a danger to these animals. It becomes increasingly apparent things are not like they used to be.

Now I'm in the process of trying to undo any damage or wrong impressions about mussels the TV piece might have caused. I have found that people in Kansas are either totally oblivious of the existence of these seemingly insignificant creatures, or they think they should be shucked for pearls. At least I didn't encourage that. Who knows how many are lying around in someone's yard, carried home from a fishing trip and

admired for their beauty. Or how many occupy a shoe box under a child's bed. There have to be some that became a convenient soapdish in a few bathrooms.

Having experience in making decent shell exhibits, I am in the position to put together a top-notch educational exhibit for the Kansas State Fair. What better place to educate the people of Kansas? The Kansas Department of Wildlife and Parks already has a wonderful exhibit with other wildlife there. Aquariums containing live native fish, and turtles and snakes, another section with mammals and birds (taxidermy). Quite interesting. Mussels are ignored. Of course, in order to equally represent every species of wildlife in Kansas, a museum is obviously the more appropriate place, and there are a few good museums at some of the universities.

However, people who attend the State Fair are not necessarily inclined to bother with museums. If the general public is to comprehend the fact that the mussels are in trouble and are protected by law, then there is a definite advantage in mussels being exhibited under the auspices of the Department of Wildlife and Parks, rather than sitting in an isolated museum case with no explanation. Unfortunately, not only are they not seen at the fair, but you never find them mentioned in the literature or brochures produced for public information on fishing and boating regulations. At least I haven't seen them mentioned. How is a person to know that these animals are protected by Kansas law?

Actually, a commendable amount of work has been done in Kansas on behalf of the mussel. Reports have been published for years; they just aren't made available to the general public unless requested. Other states have information published specifically on mussels, but there again, I have it because I knew of it and requested it. A while back I was standing in line at a local lumberyard. The lady in front of me had on a shirt with words on the back that I will never forget. It said, "In the end, we save what we love, we love what we understand, we understand only what we have knowledge of." Along with stream dewatering, impoundments, siltation, pollution, and intense commercial harvest (yes, that's done here too), ignorance has to be counted as another of the mussels' enemies. At one time, I too was one of the ignorant.

Back to the State Fair exhibit. As much as I think it would be a worthwhile project, and I seriously considered it, the obstacles which would have to be overcome would make it a major hassle. How so? In my contact with the conservation officer, I was made aware that there are strict laws and regulations regarding the transport of mussels. In making inquiry about the specifics, I found that transportation is possible with permission from KDWP. Requesting permission involves writing a letter stating the purpose, quantity, and species, and details on the destination, etc. That doesn't sound too difficult, does it? Here's the problem: If the request is approved, permission to transport is granted only for the shells collected in the same year as the permit allowing for their collection. In addition, the transport must take place in that same year as well. Ridiculous, you say? Maybe so, but not to them, because it's the law.

Imagine trying to do any sort of worthy educational exhibit just with mussel shells collected legally in one year. All the really cool stuff is off limits and almost gone anyway. For a State Fair exhibit, I could borrow shells I don't have, but there again, more paperwork. I don't have time for it right now. Maybe later. These animals are almost smothered in silt and paperwork. Please don't get the impression I'm picking on the Department of Wildlife and Parks in Kansas or any other state. I have the utmost respect for them. If it were not for them and the laws they enforce, wildlife could be in much worse trouble than it is now. Remember the rainforest.

(Continued on page 28)

MUSSEL COLLECTING IN KANSAS

(Continued from page 27)

On the subject of permits, I must make mention of the other collecting permit required in the state of Kansas, and that is the commercial harvesting permit. Commercial harvesting is done in Kansas, as well as in other states, not for pearls *per se* as some might think, but rather for the shell material for use in the cultured pearl industry. Shells are shipped to Japan where beads are made from them. These beads are placed inside marine oysters to cause them to form pearls. Such commercial collecting of mussels in Kansas is restricted to four species of Unionids, *Quadrula quadrula*, *Amblema plicata*, *Quadrula metanevra*, and *Potamilus purpuratus*. Harvesting is limited to certain southeastern watersheds. Fees for the commercial harvesting permit are considerably higher than for the scientific collecting permit, and there is also a separate buyer's permit. In 1995, Kansas issued 28 resident, 24 non-resident, and 5 buyer's permits. Proposals have been made to change fees and size limits to match those of other states that are more restrictive. Because of the reduction in numbers of mussels, it is the opinion of the biologists here that mussel harvesting cannot continue indefinitely.

Mussel refuges have been established in some areas to help reduce the pressure from harvesting, and to preserve some of the precious mussel population so they can reproduce. Studies show that the refuges currently in place in Kansas have been effective in accomplishing this.

Are you thoroughly discouraged from coming to Kansas to collect mussels? You are supposed to be. Most of you are accustomed to reading here articles on exotic shell collecting trips to isolated Pacific islands and envying the finds. Sorry to disappoint you — this started out that way, but somehow it turned out to be more of an editorial than entertainment. But hopefully it left you all better informed.

In summary, I can conclude that the researchers and biologists are doing what they can and the law enforcement people are just doing their jobs. I'll try to stay out of their way as best I can. No, I take part of that back. I like the biologists too much, and am so much like them, I cannot stay out of their way. Even with all the regulations, I persist in learning more about these fascinating life forms, in having fun exploring the creeks, and I am truly enjoying my work.

There's no place like home.

SOME REFERENCES I HAVE FOUND USEFUL:

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- _____. 1994. North American Freshwater Mussels: Part 1, The Quick and the Dead. American Conchologist, 22(2): 4-7.
- _____. 1994. North American Freshwater Mussels: Part 2, Identification, Collection, and the Art of Zen Malacology. American Conchologist, 22(3): 11-13.

Species of mussels (Family Unionidae) found in two Kansas counties (Names given follow the current listing given in **Freshwater Mussels of Kansas — Register of Taxa, Synonyms, and Assumed Misidentifications** by Mark E. Eberle, Sternberg Museum of Natural History, Fort Hays State University, Hays, Kansas. Report No. 63, November 28, 1994.)

Cedar Creek, Chase County

Amblema plicata
Fusconaia flava
Lampsilis cardium
Lampsilis teres
Lasmigona complanata
Leptodea fragilis
Ligumia subrostrata
Potamilus purpuratus
Pyganodon grandis
Quadrula pustulosa
Quadrula quadrula
Strophitus undulatus
Tritogonia verrucosa
Truncilla donaciformis

Middle Creek, Franklin County

Amblema plicata
Elliptio dilatata
Fusconaia flava
Lampsilis siliquioidea
Lasmigona complanata
Leptodea fragilis
Ligumia subrostrata
Pyganodon grandis
Quadrula quadrula
Toxolasma parvus
Unio merus tetralasmus
Utterbackia imbecillis

Also seen in both localities were the Fingernail Clams of the family Sphaeriidae, species not identified. Not seen at either of the above localities but also found in Kansas is the Asian Clam, *Corbicula fluminea* (Family Corbiculidae), which has been introduced.

BOARDTALK.....

From **BOBBIE HOUCHIN, COA Membership Chairman**, 2664 Kings Highway, Louisville, KY 40205-2649:

It is that time of year for paying your 1996 COA dues.

A member sent COA some monetary incentive to design an easier way to pay dues. Inserted in this issue, you will find a new way to pay, a pre-addressed envelope. It's pre-addressed to Mary Owen, the new COA Treasurer, and is your 1996 Dues Renewal Notice. You will not see the familiar gold renewal form we've used for years.

Please check it over before filling it out. It was requested at the 1995 Convention Board Meeting that we add members' phone numbers in the Membership Directory. If you fill in your phone number on the back flap of the envelope, below your name and address, that phone number will be used in the Membership Directory. If you don't want your phone number listed but will make it available to me, so that I can contact you if necessary, please enter your phone number on the bottom half of the back of the envelope, in the space allowed for it.

If you have a change of address at this time, check the appropriate box; if you have a change of address at another time during the year, send it to me (see my address above).

I am still having a problem with some members (in the United States only) not knowing that **American Conchologist** is mailed by Bulk Mail which is **NOT** forwarded. **If you are away from your regular address for more than a few weeks, especially during months when American Conchologist is being mailed, please let me know the address of where you will be for that time, and when you will return.** This way you will not miss an issue. Back issues are \$3.00 each, including postage.

Many of you attended the exciting and eventful '95 Convention in San Diego and it was good to see you there. To all — have a colorful fall.

DON'T FORGET TO PAY YOUR 1996 DUES!



WHAT IS IT?

Bruce and Nancy Haver, new COA members from Stuart Florida, submit this 3" X 3" piece of coral from Cebu, Mindanao, Philippine Islands. Its color is a clear peach-pink. The label indicates that it is rare and calls it "*Frontifera foliosa*," could that be "*Frondifera*"? And if you recognize it, can you tell them where to learn more about it?

1992-1993 INDEX AVAILABLE

A 1992-1993 index update to the *American Conchologist* is available, and a 1994 index is nearing completion. Please send your request for the 1992-1993 index along with \$1.25 to cover copying and mailing costs to Publications Director Betty Lipe, 440 75th Avenue, St. Petersburg Beach, FL 33706. If you want a copy of the original 20-year Index through 1991, send your order with \$4.00 to Hank Foglino, 4 Trent Court, Smithtown, NY 11787. Back issues are also available from Hank.

WALTER SAGE MEMORIAL FUND AT AMNH

The American Museum of Natural History and Dr. William K. Emerson plan to recognize Walter Sage's outstanding contributions to the community of malacologists. The Museum will identify the Department of Invertebrates' Malacology Fund as the William E. Old (Walter's predecessor at the AMNH)/Veronica Parker Johns/ Walter E. Sage, III Malacology Fund. This is a permanent fund used to support the Museum's reference collection of mollusks and molluscan research. Only the income generated from the Malacology Fund is available to use annually.

Dr Emerson says, "We are all deeply saddened by his untimely death. He was a valued friend and a respected colleague." He requests that all contributions to the Old/Johns/ Sage Malacology Fund should be made payable to the American Museum of Natural History, for the Walter E. Sage, III Fund and mailed to the American Museum of Natural History, Department of Invertebrates, Central Park West at 79th Street, New York, NY 10024-5192, directed to the attention of Dr. William K. Emerson.

1995-1996 COA GRANTS ANNOUNCED

Grants Committee member Dr. Hank Chaney announced the recipients of COA's 1995-96 grants in malacology totalling \$6,000. The grant recipients are as follows:

Laura A. Brink of the Oregon Institute of Marine Biology is to receive \$400 for her work on "Cross-shelf dispersal of larval mollusks off the inner shelf of the North Carolina Coast."

Thomas F. Duda, Jr. of the Kewalo Marine Laboratory in Honolulu, Hawaii was awarded \$300 for research on "Phylogeny and conotoxin evolution of *Conus*."

Daniel L. Graf of Northeastern University in Boston will receive \$900 for "Re-evaluation of the *Fusconaia flava* complex" of Unionidae.

Scott E. Graham of the Department of Geology in Bellingham, Washington is working on "Predation by naticids of the Miocene of Maryland," for which he will receive \$500.

Richard Jones, Florida Institute of Technology, Melbourne, Florida, has been granted \$600 towards his "Analysis of biological and physical features associated with the distribution of the queen conch, *Strombus gigas*, nursery habitats."

Dr. Jose H. Leal, of the Rosenstiel School of Marine and Atmospheric Science of the University of Miami (Florida), will receive \$1,000 for work on "Molluscs in the deepest part of the Atlantic Ocean: hadal cocculiniform limpets (Gastropoda: Cocculinoidea) from the northern boundary of the Caribbean Plate."

Christopher Meyer, Department of Integrative Biology, University of California, Berkeley, has been granted \$500 for research on "Manipulating shell colors and melanin in cowries."

Kevin J. Roe of Tuscaloosa, Alabama, will receive \$400 for a "Genetic study of the freshwater mussels, *Potamilus* and *Lastena*."

Matthew Tieger of the Biology Department, Indiana University of Pennsylvania, is to receive \$400 for research on "Growth in *Chaetopleura apiculata*."

Dr. Janice Voltzow of the University of Puerto Rico has been granted \$600 for research on "Torsion in Archaeogastropods."

Dr. G. Thomas Watters of the Museum of Biological Diversity, The Ohio State University, will do a "Review of Pre-Pleistocene North American Unionaceans," for which he will receive \$400.

A Perc in Any Other Shape

Concerning the validity of specimen labels and such, I had a disappointing conversation with a dealer at AMU last year. He had a series of *Murex somalicus* at reasonable prices. They were all aperture down. I asked him if any had an operculum. The conversation went exactly like this:

He: "Do you want them to have an operculum?"

Me: "Well...yes..."

He: "I can put an operculum in one if you want."

Me: "...?...?"

He: "None of those shells you get with an operculum ever has the original one in it?" (Looks at me like I'm a turnip)

Me: "Duh."

Although I appreciated his candor, I didn't appreciate his rancor. He was sort of snooty about the whole thing. I bought one anyway and put a big ole calcareous *Natica* perc in it.

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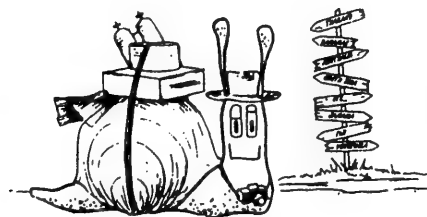
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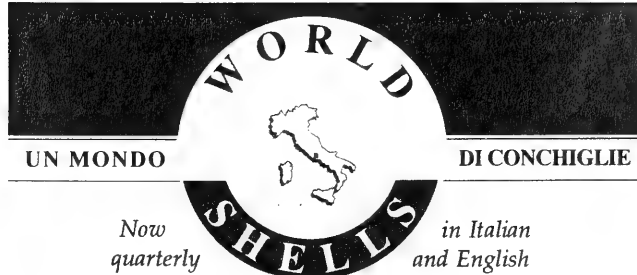


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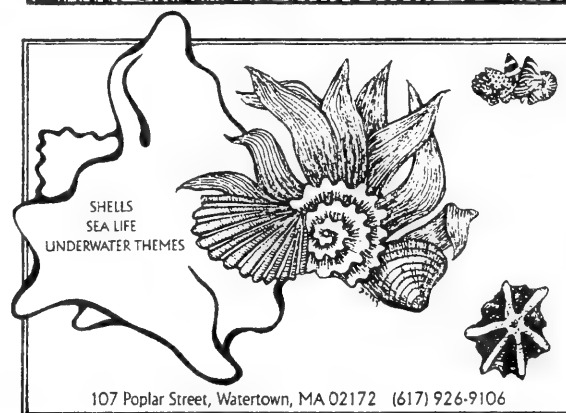
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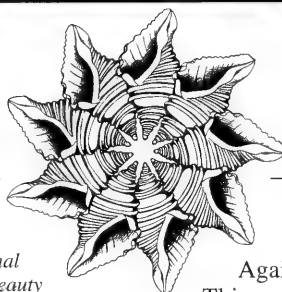
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QUARTERLY BULLETIN OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 23, NO. 4

DECEMBER 1995

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COVER: Tucker Abbott at 68. He sent this photo (used when he retired from editorship of The Nautilus) to the editor eight years ago. He was quite pleased with it and said: "Put this away in your files. If I croak or win the Nobel Prize for Conchology, you can drag it out and use it." Thank you, Tucker.

EDITOR'S NOTE

As we send out this issue, we wish to offer our sincere apologies to contributors who may be disappointed by its content. Some articles and announcements scheduled for December publication have been delayed until March by unavoidable circumstances: Tucker Abbott's death just at deadline time and the obituary contained herein took much time and space originally planned for other things. We hope that your inconvenience has not been too great, and that you will agree that this event supersedes schedules.

PRESIDENT'S MESSAGE

Again the shell collecting community has sustained a loss. Things will never be the same without R. Tucker Abbott. I first met Tucker when I joined the Astronaut Trail Shell Club. He always made shell collecting interesting for the novice collector and the non-collector. I never tired of hearing him speak about shells. It is unfortunate that he did not get to see the grand opening of the shell museum in Sanibel. But he did know the museum had become a reality.

If anyone is interested in working with our committee on the issues of government regulations and bans on shell collecting, please let me know.

If you have something you want presented at the board meeting, January 13, 1996, contact a board member. For clarity, address complicated issues in writing.

I want to wish everyone Happy Holidays and all the best in the new year. I hope to see all the board members in January.

LINDA

NOTICE TO PAY 1996 DUES

Send in your 1996 dues in the new renewal envelope which was inserted in the previous **American Conchologist**, September, 1995. Many members have already paid. Thank you very much! I also appreciated the positive comments you made about the "new way to pay" pre-addressed envelope.

Don't miss any issues of the AMERICAN CONCHOLOGIST in 1996. The March issue will have the info on the 1996 COA Convention in July in St. Pete Beach, plus many interesting shell and shell-related articles. Please make your check payable to COA and fill out the dues renewal information on the envelope which is pre-addressed to Mary Owen, COA Treasurer, P.O. Box 16319, Chicago, IL 60616. Try to give your +4 zip code.

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Keep up the good work in recruiting members — COA's growing!

Thanks, BOBBIE

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ROBERT TUCKER ABBOTT

September 28, 1919- November 3, 1995

by Lynn Scheu

Tucker Abbott passed away November 3, victim of the pulmonary illness that had been sapping his strength and his life for several years. He was laid to rest beside his first wife, Sue Darwin Abbott, in Arlington National Cemetery. The shell world is immeasurably poorer for his passing. We let him go from this earth with great difficulty, and we all count ourselves among the bereaved. No other has done more for malacology or for conchology than he. Perhaps no other has done as much.

As Senior Advisor, Founding Director, and finally Museum Director of the Bailey-Matthews Shell Museum on Sanibel Island, Dr. R. Tucker Abbott spent his last years much the way he spent the rest of his life, bringing shells to people. He took his own dream with him to Sanibel, a dream of a monument to shells-for-people, not just a museum full of shells, but a great educational institution focused entirely on mollusks. His knowledge and creativity and vision gave it form, his energy and charisma gave life and momentum to the dream. But more valuable than any other contribution Tucker brought was the force and attraction of his personality, and his influence with the astonishing number of friends he had. With that, the contributions flowed and the walls went up and the exhibits grew. The Bailey Matthews Shell Museum formally opened its doors November 18, only two weeks after his death. Somehow, we're sure he was there.

Tucker Abbott was a man who lived his dream, who made it happen. The dream began when he was a boy in Watertown, Massachusetts. He picked up his first seashells on a Cape Cod beach and, when he visited his mother's family on Bermuda, collected specimens for the Harvard and Yale biologists he met there. He knew then that was what he wanted to be. Later, when his family moved to Montreal, he and a friend started a natural history museum in the Abbott basement. Young Tucker was curator of conchology, mineralogy and entomology. The two boys biked 2,000 miles one summer to collect specimens for their museum! Patterns for the future. Tucker Abbott would travel the world collecting specimens for four major U.S. museums.

A star student of the legendary Bill Clench of Harvard, Tucker bridged the gap between the old generation of malacologists and the new. Together Bill and Tucker started publication of a journal devoted to western Atlantic mollusks, *Johnsonia*, rather amazingly while Tucker was still an undergraduate in 1941. Back then, finding new mollusks, describing, and naming them was the major thrust of the science. Anatomical studies were discussed under "color of soft parts," protoconchs were rarely mentioned, scanning electron microscopes hadn't been invented, and computers and cladistics were the stuff of science fiction.

For most people of his generation, the War Years represented a break in their careers, a time-out from life. For Tucker Abbott it was time-in, a chance to do some malacological research and make a difference in the war effort. After a two-year stint as a Navy dive bomber pilot, he was attached to a Medical Research Unit. The first medical malacologist in history, he was set the task of conquering schistosomiasis, a fatal blood fluke disease that would threaten our troops in the Pacific. His studies took him to Baltimore and Bethesda, to Guam and the Marianas, and finally to the rice fields of China's Yangtze Valley in a makeshift lab in an ambulance strapped to a railroad flatcar, where he discovered the life cycle of the schistosome in an 8mm long brown

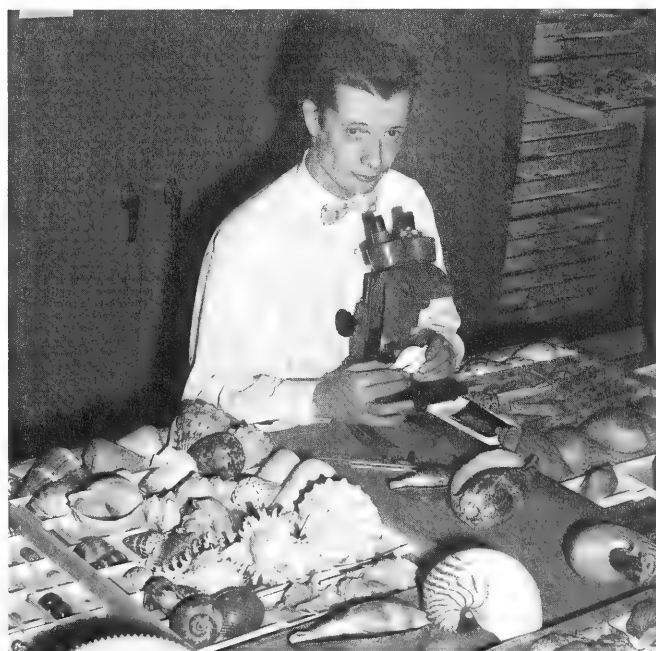
freshwater snail called *Oncomelania*. Here was the cause for schistosomiasis. His discovery saved countless lives.

Return to civilian life brought a stint at the Smithsonian (1944-1954) as Assistant Curator and Associate Curator of the Department of Mollusks, while he completed his master's degree and Ph.D. at George Washington University. During these years he wrote the first edition of *American Seashells*. Then, on to Philadelphia and the prestigious Pilsbry Chair of Malacology at the Academy of Natural Sciences. As Chairman of the Department of Mollusks (1954-69), with his characteristic energy and enthusiasm, he established the curatorial system still in use there at the Academy. He initiated a series of shelling expeditions to the Indo-Pacific region, building one of the world's best collections for the Academy along the way, and introducing the American collector to the world.

At Philadelphia he launched his own journal, *Indo-Pacific Mollusca*, became an editor of *The Nautilus*, and remained on the editorial staff of *Johnsonia*, beginning in earnest a second phase of his career, that of writer, editor, and publisher. In quick succession, he produced *Introducing Seashells* (1955), "The Family Vasidae in the Indo-Pacific" for *Indo-Pacific Mollusca* (1959), *How to Know the American Marine Shells* (1961), and *Van Nostrand's Standard Catalog of Shells* (1964). Also in this period he was an officer for the American Malacological Union, serving as Councillor (1952-55), Vice-President (1958), and President (1959).

Everything Tucker did was just a step along the way. When he finished the *Compendium of Seashells*, he was already talking about the next edition. His "Helmet Shells of the World" for *Indo-Pacific Mollusca* was only Part I; Part II never followed. The *Standard Catalog* is still a work in progress. Russ Jensen once asked him what his favorite shell was. He quipped, "Whichever one I'm working on at the moment." And that was true of everything he did. He always

(Continued on page 3)



The Young Malacologist at Work at the Academy of Natural Sciences, Philadelphia. 1958.

ABBOTT (Continued from page 2)

meant to get back to those projects. Even in the last days of his life, with the Museum opening imminent, he was hard at work on a 3rd edition of *American Seashells* with Dr. Jerry Harasewych of the Smithsonian.

In the 1960's a new book on shells was a major event and everyone rushed to own it. Today there are so many that few of us even recognize all the titles. Between that time and this stands Tucker Abbott. Every shell author writing today owes some of his success to Tucker. He created the market and the tradition. And he rang the challenge to other professionals and to amateurs. Better books than Tucker's have been written, but none that carried more impact or blazed fresher trails. No one wrote with more versatility, more creative spark, more vision. He even made a financial success of the most esoteric of collecting interests with *Compendium of Landshells*, and produced and sold recordings of the correct pronunciation of Latin names of shells, shell post cards and diaries. His books have been translated into more languages than other shell writers have books to their credit. And he was godfather to an amazing number of other works, either through his publishing company, *American Malacologists*, founded in 1973, or through his generous encouragement and advice.

In 1969, at the pinnacle of his career, Tucker moved on to the Delaware Museum of Natural History and the duPont Chair

of Malacology, again heading the Department of Mollusks, and here, Assistant Director. He continued editing *Indo-Pacific Mollusca* became editor-in-chief of *The Nautilus* (1971), and, in one unbelievably short two-year period, he completely revised and rewrote *American Seashells* to become the hefty, familiar aqua volume that has become a collector's item. He produced scientific papers for a host of professional publications. But he was then and always a man who loved people. He loved to meet them, listen to them, talk shells with them, infect them with his own excitement. And though he loved the science of his profession he loved the people more. Always gifted with a flair for captivating audiences, he expanded his public contacts, speaking before collectors and clubs all over the country, often in the company of his old mentor, Dr. Bill Clench. And he produced books: his beautifully conceived and cross-cultural *Kingdom of the Seashell* in 1972; *American Malacologists* in 1973 and its 1975 *Supplement*; *The Best of the Nautilus* in 1976.

But a rift formed between Tucker and his employer, John duPont, in part over his devotion to his writing. In 1976 he left the Delaware Museum in the careful hands of his old friend, Russ Jensen, an amateur to whom he'd imparted his passion for shells, and whom he'd introduced to the museum and trained.

(Continued on page 9)

Tucker, festooned with glasses, wearing his favorite shell shirt, and in his listening mode with Janet Padison. COA 1889. Fort Myers.



Tucker with Cecilia, and Kirk Anders at the 1983 Sarasota Convention (Vi and Charlie Hertweck photo)



Tucker at the Banquet, Fort Myers, 1989.



Tucker Abbott and friends at the 1994 COA Midyear Board Meeting, Orlando Florida. (from the top, back row) Hank Foglino, Al Chadwick, Lynn Scheu, Lucille Green, John Baker; (top, front row) Tucker, Linda Koestel, Larry Stiles, Bobbie Houchin, Lucy Clampit, Barbara Elliott; (front row from left, Betty Lipe, Walter Sage, Doris Underwood, Donald Dan, Horatio Buck)



Tucker the Book Salesman at the 1992 COA Dealers' Bourse, Jacksonville. (Chris Takahashi photo).

Some notes on recently named species of Ergalataxinae (Muricidae)

by Roland Houart

I. Introduction

The aim of this paper is to illustrate and to comment on the thirteen new species that were described in Houart (1995).^{*} Another species, whose name is preoccupied, was renamed. In that same paper, I also discussed the classification of the species in the subfamily Ergalataxinae, and illustrated and commented upon a large number of them. A second part is also in preparation.

The subfamily Ergalataxinae includes a number of poorly known, small species, to date, 80 valid species and more than 140 names. However that number may change in the future because of further studies and thanks to more extensive material.

Most species live at 5-100 meters depth, although some may live deeper. Many of the species have numerous synonyms, and have been referred to several genera or even families.

The classification of these species is not easy, particularly due to the variable shell morphology and radular characters. To date a number of problems remain partly unresolved.

For more information about the subfamily, the new taxa, and other species, I refer the reader to my paper.^{**}

II. New species named in Houart (1995)

Ergalatax zebra Houart, 1995 Fig. 1

Ergalatax zebra differs from *E. contracta* (Reeve, 1846) in its more strongly shouldered shell with broader axial ribs and relatively narrower aperture, and in sculptural details. Other species of *Ergalatax* are not strongly dissimilar.

Colour: White with numerous dark brown to blackish spiral cords. Aperture bluish-white with light brown apertural nodes. Columellar lip light brown.

Length: up to 33.8 mm.

Distribution: Only known from the type locality, Habido, Yemen, Gulf of Aden, depth unknown.

Lataxiena desserti Houart, 1995 Fig. 2

Although very similar to *Lataxiena fimbriata* (Hinds, 1844), *L. desserti* differs primarily in the morphology of protoconch whorls. Multispiral and conical, consisting of 3½ whorls in *L. fimbriata*, the protoconch is globose, with 1½ rounded whorls in *L. desserti*. Other differences are inconsistent and slight, the shell of *L. desserti* being a little broader, more inflated, and less squamous, while the operculum is darker coloured. The species was originally described from New Caledonia as *Fusus imbricatus* E.A. Smith, 1876, which, however, is a junior homonym of *Fusus imbricatus* Lesson, 1842 and of *F. imbricatus* De Kay, 1843.

Colour: Light brown, darker on second and fourth abapical spiral cords on last teleoconch whorl, or with some dark spiral bands.

Length: up to 36 mm in length.

Distribution: New Caledonia, 8-34 m.

Lataxiena habrophenos Houart, 1995 Fig. 3

Lataxiena habrophenos differs from *L. fimbriata* (Hinds, 1843) and *L. desserti* Houart, 1995, in its more elongate and smoother shell, with lower and smoother spiral sculpture, and

with more numerous spiral threads on shoulder and between the spiral cords. *L. habrophenos* n.sp. differs further in having much shorter and finer apertural lirae than in *L. fimbriata* and *L. desserti*. *Lataxiena kochiana* (Sowerby, 1900) has a smaller shell with a shorter siphonal canal, and more numerous and stronger apertural lirae, while the last teleoconch whorl has 4 spiral cords; between each are 3 or 4 threads.

Colour: Uniform whitish to beige.

Length: Up to 40.5 mm.

Distribution: Mozambique.

Orania mixta Houart, 1995 Fig. 4

The shell morphology of *Orania mixta* is similar to that of *Orania pacifica* (Nakayama, 1988) and *O. pleurotomoides* (Reeve, 1845). *O. pleurotomoides* is stouter, with fewer and stronger spiral cords, more strongly denticulate aperture, and a deeper and stronger anal notch. *O. pacifica* is broader, more globose, with more numerous and more squamous spiral cords, a more strongly denticulate aperture and a shorter siphonal canal.

Colour: Uniformly light brown, with occasional darker blotches on shoulder. Aperture whitish to light brown.

Length: Up to 17 mm.

Distribution: West Sumatra, W. Borneo and Philippine Islands, living at 73-110 m.

Orania adiaestolos Houart, 1995 Fig. 5

Orania adiaestolos is similar to *O. fischeriana* (Tapparone Canefri); but that distinct species are involved is proven by the very different protoconchs, *O. adiaestolos* n.sp. having a paucispiral protoconch of 1½ rounded whorls, *O. fischeriana* having a multispiral protoconch of 3½ whorls. *O. adiaestolos* differs further in having a more weakly shouldered shell, while most of the spiral cords are lower.

The two species differ further in details of columellar lip morphology. *O. adiaestolos* has a smoother columellar lip, with fewer, or occasionally, no denticles. The 4 columellar folds in *O. fischeriana* are stronger, more spirally oriented, more regular, evenly spaced, and longer (see Houart, 1995).

From *Orania corallinus* (Melvill & Standen, 1903) *O. adiaestolos* differs in its smoother columellar lip, with lower folds, in its more slender shell, and in its paucispiral protoconch.

Colour: Uniformly whitish to dark brown, occasionally with darker spiral cords. Aperture white to dark brown.

Length: up to 16 mm.

Distribution: New Caledonia, Chesterfield Plateau, Loyalty Ridge, South Africa, living at 33-60 m.

Orania ornamentata Houart, 1995 Fig. 6

Orania ornamentata is similar to *O. fusulus* (Brocchi, 1814), a Mediterranean and West African species, but the shell of *O. ornamentata* is generally more globose, stouter, smaller relative to the number of teleoconch whorls, and the outer apertural lip is more erect while the axial ribs and the spiral cords are higher, stronger, more rounded and more similar in size.

Colour: Light brown, some spiral cords darker. Aperture white.

Length: 18.8 mm.

Distribution: South Africa, 90-150 m.

^{*}HOUART, R., 1995 ("1994"). The Ergalataxinae (Gastropoda, Muricidae) from the New Caledonia region with some comments on the subfamily and the description of thirteen new species from the Indo-West Pacific. *Bull. Mus. Natl. Hist. Nat.*, Paris, 4e sér., 16, section A, no. 2-4: 245-197 (issued July 1995).

^{**}See review on page 14, this issue.

Research associate, Institut Royal des Sciences Naturelles de Belgique, Département des Invertébrés Récents, Rue Vautier, 29, B-1040 Brussels, Belgium

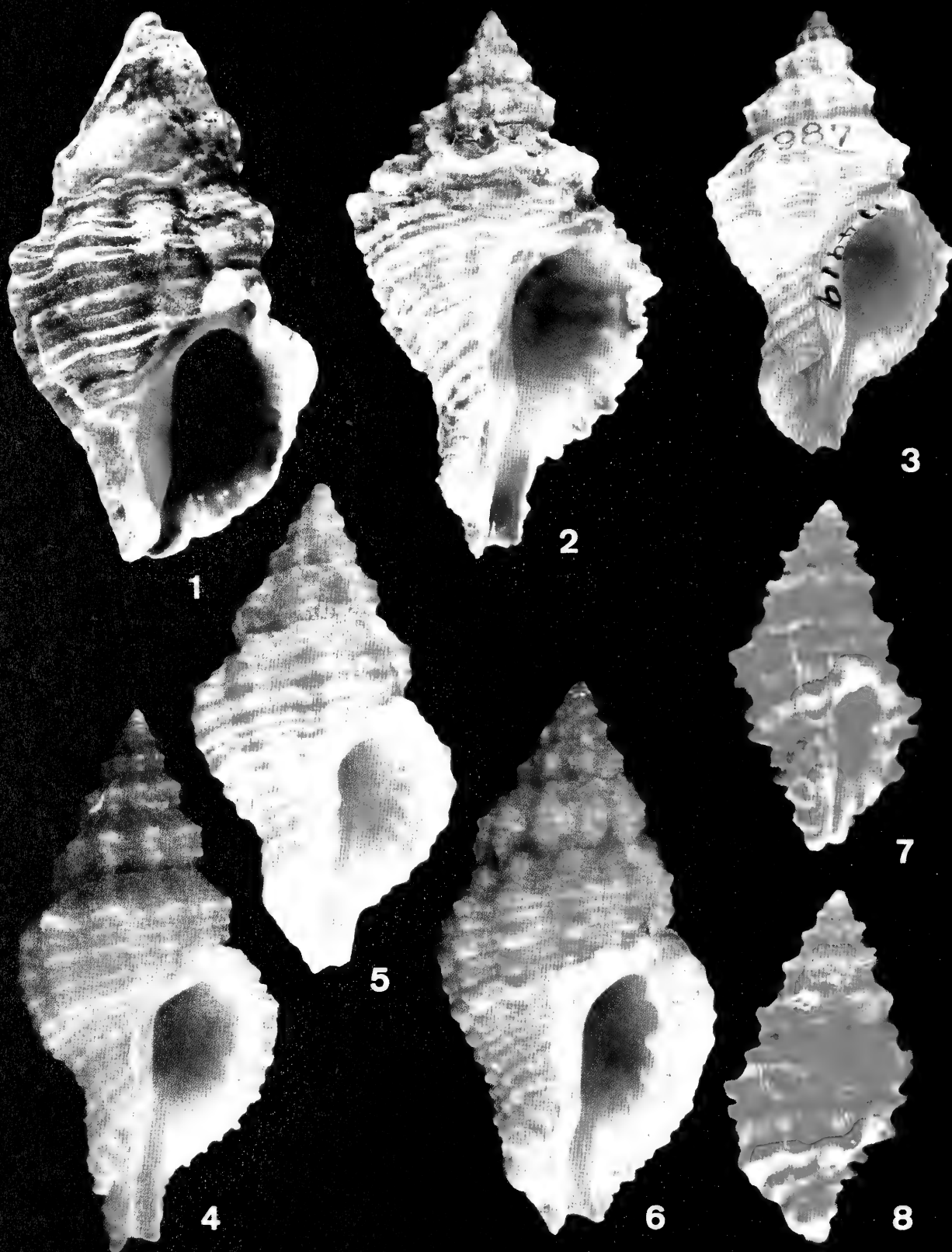


Plate 1

1. *E. zebra* Houart, 1995, Gulf of Aden, 33.8 mm (holotype WPU).
2. *Lataxiensia desserti* Houart, 1995, New Caledonia, Lagon, 26.6 mm (MNHN).
3. *Lataxiensia habropenos* Houart, 1995, Mozambique, 40.5 mm (holotype NM H4919/T1229).
4. *Orania mixta* Houart, 1995, Punta Engano, Philippine Ids., 17.1 mm (holotype MNHN).
5. *Orania adiaestolos* Houart, 1995, New Caledonia, 11.8 mm (holotype MNHN).
6. *Orania ornamentata* Houart, 1995, Natal, South Africa, 16 mm (holotype NM B3890/T1234).
- 7-8. *O. taeniata* Houart, 1995, Christmas Island, 8.2 mm (holotype AMS C152435).

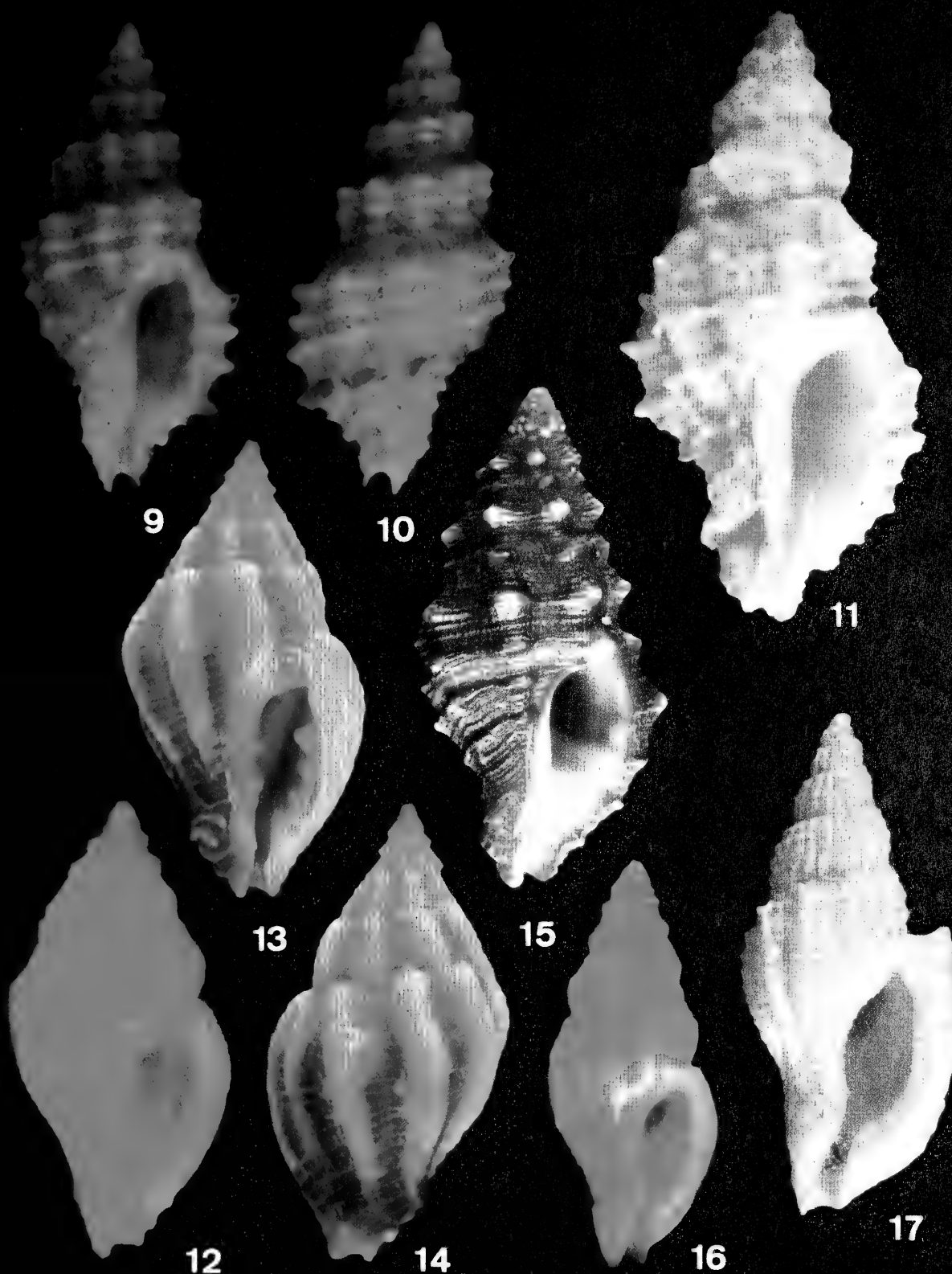


Plate 2

- 9-10. *Orania simonetae* Houart, 1995, Nuku Hiva, Marquesas, 12.5 mm (holotype MNHN).
 11. *O. archaea* Houart, 1995, S. Taiwan Straits, 20 mm (coll. R. Houart).
 12. *C. springsteeni* Houart, 1995, Philippine Islands, 11 mm (holotype NM K2484/T1232).
 13-14. *C. pinguis* Houart, 1995, Loyalty Ridge, 17.8 mm (holotype MNHN).
 15. *Orania dharmai* Houart, 1995, North Borneo, 15.1 mm (holotype MNHN).
 16. *Cytharomorula danigoi* Houart, 1995, New Caledonia, 11.6 mm (holotype MNHN).
 17. *Daphnellopsis hypselos* Houart, 1995, East Sumatra, 10.5 mm (holotype MNHN).

Ergalataxinae (Muricidae) (Continued from page 5)

Orania taeniata Houart, 1995 Figs 7-8

Although known by the holotype only, *O. taeniata* is very distinctive in its shell shape and sculpture.

Colour: Whitish with brown spiral cords.

Length: 8.2 mm.

Distribution: Christmas Island (Indian Ocean), depth unknown.

Orania simonetae Houart, 1995 Figs 9-10

The shell of *O. simonetae* is superficially similar to that of *O. serotina* (A. Adams, 1851) but is narrower, with flatter sides, and fewer, more spaced spiral cords on each whorl, while there are usually 2 instead of 3 nodes set lower on the columellar lip. From *O. xuthedra* (Melvill, 1893), *O. simonetae* differs in having a narrower shell that is smaller relative to the number of teleoconch whorls, the shoulder bears fewer spiral cords, and the columellar lip is smoother. *O. archaea* Houart, 1995 is also similar, but *O. simonetae* has a smaller, narrower shell, fewer and smaller spines, and different spiral ornamentation. Compared with *O. mixta* Houart, 1995, *O. simonetae* has a more weakly shouldered shell with fewer primary and secondary spiral cords, fewer and different spiral cords on the shoulder, and the columellar lip has two nodes.

Colour: Whitish or light pinkish. Apical part of shoulder and fourth abapical spiral cord of last whorl brown. Aperture glossy white or light pink.

Length: up to 12.7 mm.

Distribution: Only known from Nuku-Hiva, Marquesas Islands, at 30 m.

Orania archaea Houart, 1995 Fig. 11

The short-spined form of *Spinidrupa eurantha* (A. Adams, 1853) may be sometimes confused with *Orania archaea*, but *O. archaea* has higher early teleoconch whorls with more numerous and/or weaker secondary spiral cords, fewer spirally striate spiral cords, weaker developed spines, and stronger anal notch.

Colour: Light brown with darker spinelets on last teleoconch whorl. Some specimens are completely white. Aperture white or pinkish.

Length: 20.4 mm.

Distribution: Christmas Island (Indian Ocean), New Caledonia, Philippine Islands, Taiwan, at 45 m.

Orania dharmai Houart, 1995 Fig. 15

This species is included in *Orania* because of its similarity to other members of the genus. However, *Orania dharmai* is not closely related to any other known Indo-West Pacific species.

Colour: Dark brown, knobs and area between second and third abapical spiral cord on last teleoconch whorl lighter coloured. Aperture whitish, edge of columellar lip brown.

Length: Up to 15.1 mm.

Distribution: Brunei, Borneo and off Sibolga, W. Sumatra, at 18-73 m..

Cytharomorula springsteeni Houart, 1995 Fig. 12

Cytharomorula springsteeni can be confused with *C. vexillum* Kuroda, 1953, but differs in its stouter shell, with generally higher axial ribs, and more equal-sized spiral cords; *C. vexillum* has only 8 or 9 spiral cords on the last teleoconch whorl with 4-6 spiral threads between each pair of cords, each cord being brown and most strongly pigmented on axial ribs. From *C. grayi* (Dall, 1889), *C. springsteeni* differs in being generally smaller relative to the number of teleoconch whorls, in details of spiral ornamentation, and in having fewer and

lower denticles within the aperture. From *C. pinguis* Houart, 1995, *C. springsteeni* differs in having a narrower shell, with narrower and higher spiral cords, and a more weakly denticulate aperture.

Colour: Protoconch whorls light brown, teleoconch whorls light brown with darker coloured spiral cords. Aperture whitish.

Length: 12.5 mm.

Distribution: Mactan Island, Philippine Islands, 146 m.

Cytharomorula pinguis Houart, 1995 Figs 13-14

From *Cytharomorula grayi*, *C. pinguis* differs in its more elongate and narrow protoconch whorls, strongly denticulate aperture, heavier axial ribs, and more crowded, broader spiral cords. It differs from *C. vexillum* in being more inflated and in having broader and lower spiral cords.

Colour: Protoconch whorls brown. First 2 or 3 teleoconch whorls white, subsequent whorls light brown with white axial ribs.

Length: 17.8 mm.

Distribution: New Caledonia area: Loyalty Ridge and Hunter and Matthew volcanos, 325-400 m.

Cytharomorula danigoi Houart, 1995 Fig. 16

Compared with *Pascula lefevreiana* (Tapparone Canefri, 1880), *Cytharomorula danigoi* has fewer and shorter denticles within the aperture. The shell is also broader, with less angulate teleoconch whorls, a broader, more globose protoconch, while the tip of the siphonal canal is always dark brown instead of uniformly coloured. Other species of *Cytharomorula* and *Pascula* are strongly dissimilar.

Colour: Whitish to light brown, with darker blotches, tip of siphonal canal dark brown, blunt spines lighter coloured. Aperture white.

Length: 11.9 mm.

Distribution: New Caledonia area: Loyalty Ridge, southern New Caledonia, Hunter & Matthew volcanos, 200-500 m.

Daphnellopsis hypselos Houart, 1995 Fig. 17

Daphnellopsis fimbriata (Hinds, 1843) has sharper and more strongly curved axial ribs, weaker spiral cords, more globose teleoconch whorls, no axial varices and the outer lip does not become wing-like. *D. lamellosa* Schepman, 1913 has a narrower shell, lacks varices, has sharper and fimbriate axial lamellae, and the outer lip does not become wing-like.

Colour: Whitish.

Length: Up to 10.5 mm.

Distribution: East Sumatra and southern Philippines, 37-99 m.

WALTER SAGE SCHOLARSHIP FUND

The fund that COA has set up to honor the memory of Walter Sage has been quietly growing with gifts given in his honor. We'll keep you notified of its progress through this tally box in the coming issues. Should you wish to contribute to this fund, which will become an endowed grant for students in malacology, please send a check, along with an explanatory cover letter, to the Walter Sage Fund, c/o Dr. Gary Rosenberg, Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103-1195. Make checks payable to the Academy of Natural Sciences, Philadelphia. The gift is fully tax deductible.

The current amount in the Walter Sage Fund is:
\$2100.00

ABBOTT (Continued from page 5)

Tucker "retired" to Melbourne, Florida. Here, with his wife Cecilia, he was going to relax, he was going to write and publish books and have time for research. He joined the Astronaut Trail Shell Club as an active member and produced educational programs for their meetings. He traveled. But men like Tucker Abbott do not retire. He had so much to give, so much still to do, and such an affection for the shell collecting fraternity that he couldn't really kick back and relax. Russ Jensen said, "Although he truly loved the science, he loved bringing it to the people more." It was during this time that he really earned the nickname, "Mr. Seashell," Guru of the Shell World. He became intimately involved with the Conchologists of America, and he took on the building of the Sanibel Museum.

He continued editing *The Nautilus*. And he managed to make a living producing shell books. . . the new *Standard Catalog* in 1978, *Register of American Malacologists* in 1986, and its *World Size Records* updates, and the two *Compendia* in 1982 and 1989. And he began publishing the works of other shell writers, including Twila Bratcher and Walter O. Cernohorsky's *Terebridae of the World*, and Kay C. Vaught's *A Classification of the Living Mollusca. Indo-Pacific Mollusca* became *Monographs of Marine Mollusca*, published by American Malacologists.

Getting shells to people was his passion, through his books, his personality, his presentation. Tucker Abbott's lectures, programs and spontaneous talks were a joy to hear. He never spoke over the heads of non-shellers and beginners, but he could pitch his message so the most experienced of us always learned something too. And his presentations were full of fascinating facts and examples, a blend of the expert teacher, the informal conversationalist, and the confiding pal — you felt he was speaking to you alone. The end result was captivating and infectious. You wanted to be what Tucker was, do what he did, and know all he knew. Though no politician, he was a genius at public relations.

The legendary friendliness of the shell collecting fraternity owes much to Tucker, too. He loved every shell and sheller as he met them. An intensely friendly man, he could put a stranger at his ease in a few words, make a shy collector blossom. He poured forth ideas and recommendations, suggestions and inspiration, until the object of his attentions was transported out of himself and into the romance of shells. And he listened to the humblest among us with great attention and seriousness. He said there were no stupid questions, only stupid answers. He welcomed everyone with equality and warmth. He *related* to the amateur, made him feel worthwhile, valued. Tucker Abbott was quotable, almost Churchillian in his turn of phrase. At a COA board meeting, when conservation legislation was under discussion, Tucker, who believed fervently in the collector's right to collect, said, "If we allow just one generation of children to grow up believing that it is a sin to kill a shell for science, then we are lost." He was ever a historian and biographer, always conscious of the effects of the past on the present, the present on the future.

To the COA, which he actively joined in 1977, his stamp of approval meant much. Fittingly, he was many times the banquet speaker, and his convention talks and presence at nearly every convention were a perennial draw for new collectors. He gave generously to auctions and participated in the Bourse. He showed no interest in leading COA, but did the work he knew best within the organization. Besides frequent speaker, he was Awards Chairman for a number of years, appropriate choice for one who so encouraged good exhibits and so often judged shell shows. He served as Publications Chairman from 1985 to 1990, overseeing the production of the *COA Bulletin* ("American Conchologist" was Tucker's suggestion for its new title), and other publications for COA. He became Grants Chairman in 1988, a position he filled with dedication and wisdom until ill health forced his resignation this spring. Under his guidance and urging, COA gave almost \$37,000 in grants in malacology. He was the moving force



Tucker in his socks and bermudas and shell shirt at the Key West Convention, 1980. From left, Kirk Anders, Gerrie Walklet, Tucker, Marty Lerner, and Clair Stahl.



Tucker with COA President Richard Goldberg, St. Louis Convention, 1987.



Tucker Abbott, COA Banquet Speaker, Sanibel, 1982.

Tucker with S. Peter Dance, co-author of *Compendium of Seashells*, 1990. (Allan Walker photo)



behind the creation of the Walter Sage Fund for Education, even as he himself was dying. Further, his presence and approval and participation did much to make COA respected in the eyes of the shelling community, both amateur and professional.

The position Tucker took up between the two worlds of amateur conchology and the science of malacology has made a tremendous difference. No other scientific discipline has so close a cooperation with amateurs; in many sciences, mutual suspicion and even hostility is usually the rule. But Tucker forged a very special relationship, a partnership of resources that has enriched both groups and advanced the knowledge of malacology.

And our shell clubs are so indebted to him! They were the ideal forum for Tucker Abbott — where else could he find such eager audiences, such minds hungry for his product? Member of most of the U.S. clubs, honorary or life member of many, he even founded a few. He was always willing to give a program or judge a show. He encouraged amateurs to become more scientific, to buy books (usually his), to build collections with good data. And to show their shells at well-run, expertly judged shell shows. Often with Cecilia beside him to judge the artistic entries, Tucker was senior shell show judge for every Florida shell show, and for many outside the state.

Tucker believed with all his heart that the shell collector was a friend to mollusks, a key to their conservation. A large part of his mission was to keep shell collecting respectable, keep it from falling under the label of anti-environmentalism. Right up until this summer, he was appearing on national television and in such esteemed publications as the **Wall Street Journal** and the **Smithsonian Magazine**, outspoken in his attack on the Sanibel shell ban; in all the furor surrounding its passage, he was a bastion of sanity. He knew mollusks and their requirements. He knew shell collectors and their needs and motives. And he knew the two could and would co-exist in their interdependence, so he remained the fearless spokesman for the collector. As an admirer said in his tribute to Tucker,* "R. Tucker Abbott was our Tucker Abbott." Who now will champion our cause?

Robert Tucker Abbott was a man who stood as a bridge between his various worlds: he was a malacologist, an ambassador, a pioneer, a showman, an author, an editor, a salesman, a research scientist, a museum curator and director, a speaker, a leader, a judge, a showman, a visionary, and a friend. And he brought all those vocations together in praise of shells. There'll never be another Tucker Abbott. He stands unique, because he answered the needs, built the traditions, showed the way, and the world is much richer for his passing through it.

R. Tucker Abbott is survived by his wife, Cecilia White Abbott, his son, Robert Tucker Abbott, Jr., and his daughters Carolyn Tucker Palmer, Cynthia Douglas Sullivan, Cheryl Robin Nelson, Jonna Leigh Robson, and Erika Vonder Heyden. Our deepest sympathies go out to them all. The family requests that those who wish to give memorial contributions make them to the Bailey-Matthews Shell Museum, P.O. Box 1580, Sanibel Island, Florida 33957.

The editor wishes to express appreciation to Russ Jensen, (Delaware Museum of Natural History, retired) for details of Tucker Abbott's career, and to Dr. Gary Rosenberg (Academy of Natural Sciences, Philadelphia) for all his help, both with information and with expert editing. Thanks for assistance of several kinds also go to G. Thomas Watters, Richard Goldberg, Lucille Green, Edie Chippeaux, Betty Jean Piech, and Bobbie Houchin.

* Art Weil on the Internet, Tuesday, November 7, 1995
(mollusca@ucmpl.Berkeley.EDU)

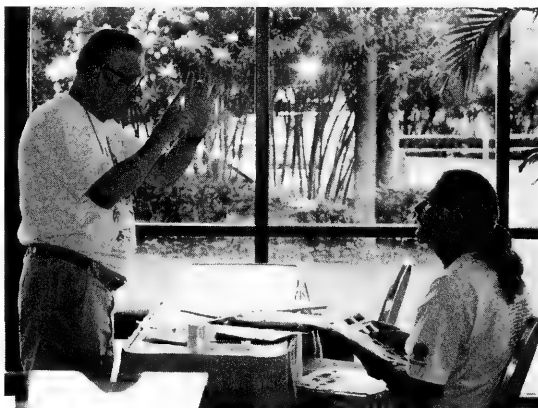
R. Tucker Abbott, distinguished author, publisher and malacologist, 1989.



Tucker the Shell Show Judge, with fellow judges Donna and Wayne Harland, Sanibel, 1991.



Tucker Abbott with Hank Chaney at COA in Jacksonville, 1992 (Allan Walker photo).



Tucker explains to Convention Photographer Steve Barry just how to capture that perfect shot, Panama City, 1993.

A BOURSE IS A BOURSE, OF COURSE! (OR IS IT?)

by Deborah Wills

Have you ever attended a COA bourse? If you haven't, the dictionary's definition — *exchange*, or a place where merchants etc. meet for business — does little to prepare you for the actual experience. At my first COA convention, I remember waiting, somewhat bewildered, for the bourse to open. My eyes strained to see what might have inspired the crowd to gather with such excitement.

The momentum of the crowd literally moved me through the door as people rushed to search for just the right specimen, book, picture, trinket and/or person. The room filled with the hum of buyers and sellers *exchanging* their wares. Working from booth to booth around the room, I looked at shells, avoided being run over by the single-minded collector or the simply overwhelmed and glassy-eyed spectator, greeted the few attendees I knew, and listened in on serious and not-so-serious discussions on a wide range of shell topics. Unfamiliar shells passed in front of my eyes while strange words and concepts floated in one ear and usually out the other. The excitement of finding so much shell stuff in one place was mind-boggling to a land-locked sheller like me.

Exhausted, I reluctantly left at the end of the day, only to be irresistibly drawn back early the next morning. My confidence flowed as the newness, but not the excitement, of the bourse experience ebbed. Knowing which booths to browse, I zigzagged around the room making last minute purchases and gathering final tidbits of information. Memories of that first bourse, like a first love, will linger on, but I've discovered a new type of "bourse" with potential for surpassing, in every way but one, that initial experience.

"A bourse is a bourse, of course, of course, and no one can top a bourse, of course, unless of course the bourse is the famous Internet." (Remember that old sitcom tune, "A horse is a horse"?) The Internet a bourse? "Isn't the Internet some computer thing we hear about on TV?" you ask. "My neighbor says she uses it but what's that got to do with me and shells?" Yet the Internet is a place of exchange and a place people meet for business. And Internet's *potential* for exchange of information, products, and services among shellers is great. If the Internet has intimidated you up to now, read on. It is really not so difficult, and its potential is very exciting for shell collectors.

Both the COA bourse and the Internet occupy an area (space) that can be entered (accessed) through designated doors (gateways). The bourse is usually contained in a single, physical location (room) with one or more entrances (doors). On the other hand, the Internet, a communication network which connects computers (or computer networks) regardless of their geographical location, occupies a non-physical "room," or universe which is commonly called Cyberspace. Commercial services (Prodigy, America Online, CompuServe, and/or other direct service providers) act as "doors" by providing access to the Internet. Entrance fees are not usually charged at the bourse, but access to the Internet can typically cost \$10.00+ per month.

Inside the bourse, the participant is allowed freedom of movement to visit numerous booths where dealers display their merchandise in varying degrees of organization. Once connected to the Internet, the user can electronically visit "booths" (information servers) to browse information (text, graphics, sound, video, etc...). However, not all information servers allow free access. At the bourse a friend might help

you find a specific type of shell, while on the Internet, certain types of computer programs (Navigator, Web Crawler, Spider, Archie, Veronica) help you locate information related to your interest. Also just as human dealers get so busy that people can't get near their table to view the merchandise, electronic information servers can refuse access to their information merchandise until some customers "move on" or disconnect.

The bourse is a place to buy, sell and exchange. So is the Internet. Imagine buying a favored shell direct from an overseas dealer without ever having to leave home, make a phone call or mail a letter and wait for a response. (Yes, it'd be more fun to go in person, but not all of us can.) I have seen several shell collections listed for sale on the "Net" and, as shell dealers put their sales catalogs online (out on their Internet "bourse tables"), electronic buying, selling, and exchanging will increase. Innovative dealers will even include color pictures of their specimens, or video clips of locations for shelling tours (as always, "Buyer beware"). Out of courtesy, some dealers at the bourse will direct you to another booth for something they can't supply, just as many information servers will provide pointers (links) to sources of related information.

The bourse is a great place to learn from others in our field of interest. People may stop to chat, relay a message from a colleague, or vent personal aggravations. Listening to and perhaps participating in discussions on favorite shelling sites, cleaning techniques, and taxonomy debates can be enlightening, or just plain frustrating. But why limit this activity to once a year at the bourse? The Internet offers year-round opportunities for interaction by providing methods for chatting, sending personal electronic messages (e-mail or email) to colleagues and dealers, participating in scholarly and not-so-scholarly discussions (Listservs, forums, newsgroups), and expressing your irritations at what others are saying (commonly called flaming). With the advent of electronic academic classes, we might soon be able to enroll in "Mollusks 101" for college credit. Wouldn't that be great?

The COA Bourse is limited in scope to conchology and related topics, while the Internet is vast, unlimited, and mind-boggling in scope. The scientific terms, concepts, and jargon of conchology seem strange and intimidating to the uninitiated, just as Internet technical terms, ideas and lingo are intimidating to many conchologists. Like anything else, we learn by researching the topic and by doing. Whether it's exploring a COA bourse or the Internet, once you learn what to expect and how to maneuver among the "booths," your confidence will grow. Before long you'll be browsing cyberspace looking for just the right specimen, book, picture, trinket or person. As time and space allow, we'll bring you more information on the Internet, how to use it, and how it can be used to further conchology. But if you're in a rush to catch the next "wave" of the information ocean, check with your local bookstore, library or community center for further information and classes on the Internet.

What's that? What is the one way the Internet can't surpass the bourse? Well, at present, even with the new 3-dimensional technology, the Internet can't deliver that real shell you were coveting, that old friend you were longing to see. For in-the-flesh handshakes, hugs, and hands full of shells, you'll have to attend the COA bourse each summer. Then, use the Internet to keep informed and in touch the rest of the year.

FOSSIL STALKING IN CHILE

by Thomas J. DeVries

Dr. DeVries is a recipient of a 1993 COA Grant for his work on the Neogene mollusks of the Peruvian province. He spent three more weeks in the field this August, working on Turritella and some stratigraphic problems. He writes to say that COA is acknowledged for its grant in an article he did in the October 1995 Veliger.

A hazy light burnished the white flanks of the ferry **Issaquah** as it carried me across Puget Sound from Vashon Island to Fauntleroy Dock early one August morning. Twenty-four hours, three countries, and four airports later I waited my turn for customs at Aeropuerto Bernardo O'Higgins in Santiago, Chile. At the end of a labyrinthine glass-lined hall, beyond a swarm of taxi drivers and waiting relatives, I spotted the faces of my two colleagues. Daniel Frassinetti, of the Museo Nacional de Historia Natural, and Vladimir Covacevich, of the Servicio Nacional de Geología, had arranged to escort me to the museum.

For fifteen years I have been studying the Cenozoic molluscan fauna of Peru, first from the uplifted marine terraces (*tablazos*) of northernmost Peru, later in the Pisco Basin of southern Peru. While some Peruvian species are identical or nearly so to comparably-aged species from Central America, others show a greater affinity with species described from the Cenozoic deposits of Chile. Consequently, a long-overdue trip to the Chilean museum was arranged, supported in great part by a generous grant from the Conchologists of America.

The purpose of the trip was to compare the thousands of specimens of gastropods and pelecypods collected from the Pisco Basin of Peru with the extensive collections housed in the museum, as well as another collection stored in the basement of the University of Chile. The latter collection represents decades of field work by the late Dr. Juan Tavera. The diversity of Chilean and Peruvian mollusks spanning the early Miocene to late Pleistocene provides rich evidence of Neogene biogeographic patterns in the southeastern Pacific Ocean. Additionally, several species offer glimpses into the evolutionary history of monospecific genera that presently are found only within the Peruvian or Magellanic Provinces.

The museum and university collections in Santiago contain many types, figured specimens, and undescribed mollusks obtained over the past century by generations of Chilean and visiting foreign paleontologists. Most prominent among the

early scientists was R.A. Philippi, a 19th-century naturalist instrumental in establishing the museum and author of the most important treatise on Chilean fossil mollusks. Others who have contributed to the university and museum collections include Dr. Tavera; Dietrich Herm, a German doctoral student who exhaustively studied the Pliocene and Pleistocene molluscan fauna of Chile during the 1960's; and Frassinetti and Covacevich, who have studied the molluscan fauna of the Navidad Formation of central Chile and various localities in southern Chile for the past two decades.

Driving into the city in Daniel's car, the three of us compared a decade of life's events since we last met, in Punta Arenas, Chile aboard the **R/V Hero**. We had parted after two weeks of dogging Charles Darwin's footsteps through the Chonos Archipelago, searching the rocky island shores for Miocene and Pliocene mollusks.

In Santiago, Daniel had arranged housing with a museum colleague, Herman Nuñez, a herpetologist specializing in the biogeography of a diverse family of desert lizards. Herman and I spent many early mornings waiting to hop the "359" bus to cross the city, and many late evenings in his kitchen conversing over bottles of Santa Maria "Tres Estrellas."

The museum is an imposing 19th-century edifice of concrete and plaster that sits to one side of a large park known as the Quinta Normal de Agricultura (Figure 1). The paleontology wing is on the second floor. Its windows look inward on a shadowy courtyard and outward on a grassy playground. In winter, the dank hallways and offices are uncomfortably cool. In February, Daniel told me, the same hallways provide a refreshing refuge from the summer sun.

Work at the museum fell into a familiar pattern: arrive at 8:30 or 9 a.m. work until 1 p.m. under the watchful eye of a photo of Dr. Philippi; lunch with Daniel or Vladimir at the courtyard canteen; work until 6 p.m. pack up at dusk and head home by bus.

My daily work consisted of browsing through tray after tray of fossils, looking for a few that would help me to understand the collections from Peru. Once a key fossil was found, I had to puzzle over the similarities and differences between the Chilean material and representative Peruvian specimens brought from home. After taking notes and photographing one set of specimens, it was time to move on to another collection and another problem. During this time I was able to compare notes and ideas with Daniel, Vladimir, and Juan Manuel Estredo, a university student working at the lab.

In addition to studying museum collections, I had the good fortune to examine the entire collection of Tertiary mollusks amassed over several decades by Professor Tavera. The university collection was made available through Professors Ruben Martinez and Eduardo Valenzuela.

While it would take too long to summarize my findings, many of which are still preliminary, the following list touches on some of the highlights.

1. New specimens of the gastropod genus *Chorus* (Muricidae: Rapaninae) collected by Frassinetti and Covacevich from the upper Miocene beds in Chile are nearly identical to a new late Miocene species discovered in Peru. Together with two other species of *Chorus* discovered in Peru, they double the temporal range of the genus in the southeastern Pacific Ocean. The heyday of this genus was during the Pliocene, when as many as five or six species inhabited waters from the



Figure 1. Entrance to the Museo Nacional de Historia Natural in Santiago, Chile, viewed across a monument dedicated to Alexander von Humboldt.

Box 13061, Burton, WA 98013



Figure 2. An example of the muricid genus *Chorus* from Pleistocene strata in Chile.

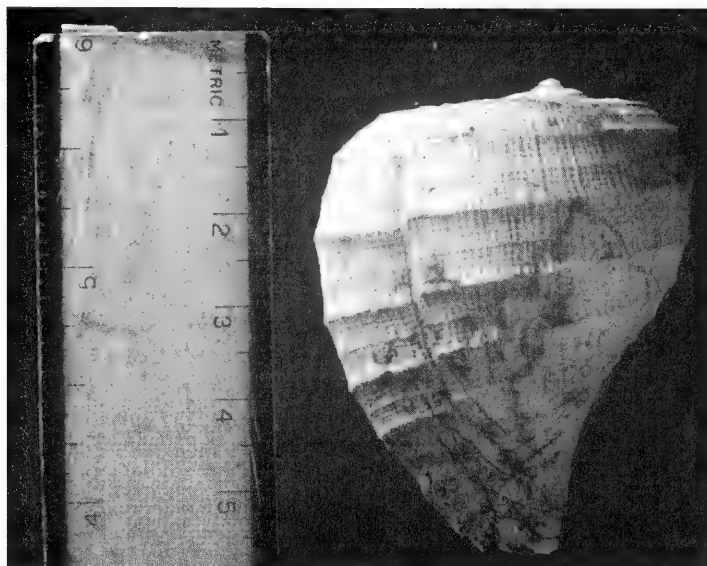


Figure 3. *Ficus distans* (Sowerby, 1846) from early Miocene strata in Chile. The same species has been discovered in the Pisco Basin of Peru.

Chonos Archipelago to northern Peru (4°30' S) (Figure 2). Today, a single species remains: *Chorus giganteus* (Lesson, 1830), found along the southern coast of Chile.

- Specimens of Pliocene and Miocene *Acanthina* (Muricidae: Thaidinae) from Chile are comparable to specimens of new species from northern and southern Peru, indicating a much expanded temporal and geographic range for the genus than previously recognized. The fossil evidence suggests that the genus *Acanthina* is endemic to South America and not closely related to any Central American thaidine assigned to *Acanthina*.
- Specimens assigned to the gastropod genera *Gastroidium* and *Pseudoliva* from both countries illustrate a problem with their present taxonomic treatment in South America.
- A complex biogeographic history of *Turritella* in the region is clearer after studying specimens of *Turritella chilensis*, *T. affinis*, *T. cingulatiformis*, and *T. cingulata* from both countries. No fossil species of *Turritella* from Peru or Chile other than those belonging to this species complex were found to occur along the coasts of both

countries.

- Despite seeming similarities in early Miocene faunas in Chile and Peru (Figure 3), the differences are more marked and suggest provincial boundaries along the western coast of South America that may not reflect the present boundaries.

On two separate occasions we were able to get into the field and visit Cenozoic fossil localities along the coast. A number of Pliocene terrace deposits were visited along the central Chilean coast. Also visited were classic Eocene outcrops at Algarrobo, exposed along a public beach at low tide. The most intriguing locality was Lo Abarca, a quiet village nestled in a valley inland from Cartagena. Poorly exposed coquinas set in the midst of diatomaceous siltstones of presumed Early Miocene age contained specimens of *Acanthina*, *Mesodesma*, and other genera more suggestive of a Late Miocene or Pliocene age.

Thanks to my colleagues in Chile, my time in Santiago was well spent; many of my questions regarding specific taxa were answered; and many new questions that I had not even contemplated were posed. Nothing better could be asked of a scientific expedition.

News of Bailey-Matthews:

COA GOES FREE!

If you haven't joined the Sanibel Shell Museum and Educational Foundation yet, you may wish to do so; and if you are already a member, the museum wants to remind you that it's renewal time there too. (Look for the COA membership renewal envelope in your September issue.) This worthy institution, devoted entirely to the study of mollusks, opened its doors in a formal grand opening ceremony in November. Education about seashells, one sure way to protect mollusks, is one of the primary missions of the Foundation and its Bailey-Matthews Shell Museum, and so its welfare is of concern to shellers everywhere.

But just in case you aren't a member yet, and would like to preview the museum next time you're in the Sanibel vicinity, you may enter free of charge as a member of Conchologists of America. All COA members are granted complimentary entry to the museum, as a gracious thank-you from the Foundation and Museum for COA's gift of funds for the Museum's admission desk. So, next time you're near Sanibel, the Museum invites you to drop in and see what our COA gift has done. Your membership card will admit you, or the Museum admissions desk has a current COA membership list.

BOOK REVIEWS

The Ergalataxinae (Gastropoda, Muricidae) from the New Caledonia region with some comments on the subfamily and the description of thirteen new species from the Indo-West Pacific by Roland Houart. *Bulletin du Muséum National d'Histoire Naturelle, Paris* (4) 16(A): 245-297.

The numerous reviews by Vokes of the western Atlantic fauna have gone a long way towards increasing our understanding of the muricid taxa. Ponder and Vokes took *Murex*, a confusing, disorganized group, and turned it into a confusing, organized group. Houart revamped the Indo-Pacific *Chicoreus* groups, perhaps aggravating many collectors by sinking their expensive specimens of *crocatus* into *banksii*. Houart's review of the new taxa described since 1971 [more pictures!] is indispensable to muricid collectors as a gateway to all of the obscure descriptions published in even more obscure "journals." Things are starting to come together. This paper is yet another installment by the indefatigable Houart.

Most muricid collectors are familiar with names like *Murex*, *Haustellum*, *Chicoreus*, and *Homalocantha*. We know that even a halfway decent specimen of *Chicoreus spectrum* can make the best cone, cowry, or volute look like yard waste*. But the names of *Cytharomorula*, *Muricodrupa* and *Daphnellopsis* may not be so familiar. We all have some of those little, brown muricid-type things in vials, the malacological equivalent of sparrows to ornithologists, that we can never quite positively identify. Every book lists them under a different name, a different genus. So it was with glee that I hauled them out and sat down with Houart's paper on the Ergalataxinae.

Thirteen new taxa are proposed. All are illustrated, usually with multiple specimens. Nuclear whorls and radula are shown. Synonymies are limited to primary references. This is the usual high quality work that we have come to expect from Houart, with only a few complaints. One problem that plagues his work is his photographs. In this paper, as in others, photographs range from excellent to poor. Numerous ones are washed out, with little contrast, making identifications difficult. This is a common problem when photographing small species. My second complaint is that Houart is often too brief, and leaves us wanting more information. Under *Pascula muricata* (Reeve, 1846), for instance, he mentions that it "has at times been misidentified as *Cronia ochrostoma*. . . , or as *Drupella elata*" but then gives us no clues as to how to discern them.

You will see some changes. *Pascula benedictus* (Melvill & Standen, 1895) has given way to *P. lefevreiana* (Tapparone-Canefri, 1880). The species *fiscella* (Gmelin, 1791), a taxon that has bounced around in several genera and under various species names, is placed in *Muricodrupa* and now includes *funiculus* Wood, 1828, as a synonym. *Daphnellopsis murex* Hedley, 1922, is shown to be an Indo-Pacific member of the Caribbean *Lindapterys*. *Cytharomorula grayi* (Dall, 1889), known to most collectors as that beautiful, but very peculiar, species from Brasil, also is found in the Indo-Pacific. Several species are allocated to new combinations. *Maculotriton ingens* (Houart, 1987) remains in that genus, but seems misplaced.

Houart is a great proponent of nuclear whorl morphology, and has often used that to distinguish between otherwise similar species. Here he establishes *Lataxiene desserti* as a new species apart from the familiar *Lataxiene fimbriata* (Hinds, 1844) based on paucispiral nuclear whorls. *Orania adiaestolos* is described as different from *Orania fischeriana* (Tapparone-Canefri, 1882) by

the same distinction. The idea [unproven] that both multispiral and paucispiral nuclear whorls may occur in different populations of the same species has been discussed in recent years, but it is clearly not a theory to which Houart subscribes.

If you expect to identify all of your little, brown muricids, you may be somewhat disappointed by this paper. I was not able to identify some of my specimens, and some I thought I had identified are now questionable. The problem of course is that this is not a review of the whole subfamily, and to Houart's defense, it was not intended to be. Still, it puts us further down the road to understanding these somewhat forgotten members of the Muricidae. We anxiously await a complete treatment of the group. And someday, all of the murices? Until then, Roland, I got some little brown shells to send you.

—G.T.W.

Marine Life of the North Atlantic: Canada to New England, by Andrew J. Martinez and Richard A. Harlow. *Marine Life*. Soft cover, spiral bound, 272 pages.

How many collectors, I wonder, have tried to identify a mollusk from observations made on live specimens in the field when none of the standard shell books show anything but dead specimens? This all-too-familiar problem would soon become a thing of the past if more books like this one were available. An expertly photographed field guide to all variety of marine organisms, it is at once both useful and breathtaking.

Based in format on the marine photo-guides usually found for tropical areas like the Caribbean or Baja California, this book covers life under the sea from Al[canadian hermit crabs] to *Z[irfaea crispata]* and all manner of algae and fish in between. These pictures prove that there is beauty under every sea, even one as cold as the North Atlantic! Each pair of opposing pages is set up with text on the left page and a photo illustration for every species on the right. The text includes sections on the all-important identification criteria, habitat, range, and a comments section that includes interesting trivia and tidbits (common names, similar species, etc.). The photographs, especially those of the mollusks, are vibrant and clear, showing details of the living animals close up. In addition, the photo pages contain a useful feature I have not seen before: data lines for entering dates and locations where the reader has seen the species in the wild.

The mollusk section, by far the largest, is over 50 pages long, and is quite comprehensive for this geographic region. The four major classes are included, with the gastropods getting most of the attention. It is the pictures that immediately grab you here, and the photos of the nudibranchs are frankly spectacular, especially as many of them depict the animals laying their species-characteristic egg masses. Best, perhaps, is that the mollusks are photographed, for the most part, live in the field and not as dead shells arranged on a beach — even the bivalves, a group that has always been poorly illustrated in this type of book. Rounding out this edition, excellent pictures of cnidarians and echinoderms (especially the feeding sea cucumbers) show beauty in the sea extends beyond the mollusks.

There are a few problems, to be sure. The few pictures of dead mollusks are of rather ratty ones, and although this might be a more accurate depiction of what the average person would find beachcombing, they look out of place here. A few typographical errors occur, the most glaring being the "bivalves" heading on the cephalopod pages; and since the authors give some synonyms, I would like to have seen at least the authors' names applied to the species. On the whole, however, the many photographic positives definitely outweigh the few negatives.

Perhaps the most remarkable thing about this book is that it is privately published, something one doesn't see much of with these glossy photo-guides. This, I suspect, tends to make the

*All you cone, cowrie and volute collectors please remember (if you are even reading this!) that the reviewer is a murex-fancier to the point of distraction. He once told the editor that he could overlook a lot for great personal beauty, which tolerance goes a long way toward explaining his obvious predilection for things with spines.

book harder to find than many, but the hunt is worth the effort. For more information, write Marine Life, P.O. Box 335, Wenham, MA 01984.

—Chris Boyko, AMNH

An Annotated Bibliography of the Reproduction and Propagation of the Unionoidea (Primarily of North America) by G. Thomas Watters. *Ohio Biological Survey Miscellaneous Contributions 1. Published by Ohio Biological Survey in Cooperation with the Ohio Division of Wildlife.* 165pp. Paper. \$20.00 plus \$3.00 s/h. Please inquire for foreign orders. Order from Director, Ohio Biological Survey, Museum of Biological Diversity, 1315 Kinnear Road, Columbus, OH 43212-1192.

It was with reluctance that I set out to review this book. I am not a student of the Unionidae, and bibliography isn't the sort of chairside reading I normally choose. Bedside, maybe. But I noted in the "Acknowledgements" that the author quoted J.R.R. Tolkien, author of the *Lord of the Rings* trilogy, and, with me, anyone who likes Tolkien deserves a second chance. And it was published in and by the State of Ohio, my birthplace, heart's home. As a plus I noted that the funds for the project were from that "Do Something Wild" income tax gimmick you always elect to give to, but wonder about. And besides, its author is a frequent contributor to *American Conchologist*. There was to be no weaseling out. I sighed, sat and delved. And I was fascinated.

Turns out that the sex life of those endangered freshwater clams that spend their nursery weeks with a fish for surrogate mom has stimulated a lot of scientific investigation, beginning in 1695 with van Leeuwenhoek — yes, the inventor of the microscope; but it turns out he was also a naturalist who wrote a two part work, *Arcana Naturae Detecta* or "The Secrets of Nature Revealed." He revealed that unionids **had** a sex life, via separate sexes, and described the eggs and glochidia. And so it goes for the next 300 years.

The final entries of the bibliographical listing, in 1993, deal in part with attempts to rescue from the invasion of the zebra mussels these fragile, sedentary, opportunists that reach their greatest distribution and diversity in the rivers and streams of the Eastern U.S. (What pearling didn't do, it seems man's accidental introduction of an exotic species is likely to accomplish.) There's also an Addenda tucked in, bringing the ABRPU up to 1995.

It turns out that the key word in that lengthy title is "annotated." I learned in these notes a very entertaining history of the study of the Unionidae (and a lot of interesting little by-bits along the way: Did you know that Julius Caesar invaded England, in part, to search for pearls? And that, as early as 1893, naturalists were calling for a halt to the harvest of river mussels for the pearl industry, to the "reckless prodigality and waste of such resources by man"? — We don't learn fast, do we?). I also learned a lot about the creatures that I hadn't learned from Dr. Watters' very fine 2-part exposé, "North American Freshwater Mussels" (*American Conchologist*, Vol. 22, nos. 2 and 3, 1994).

The notes are really amazing. Dr. Watters not only amassed the 547 references that the bibliography contains, but he also examined all but two of them (a 1797 text by Rathke published in Copenhagen, and an 1866 "Inaugural-Dissertation" by Franz Leydig, the first indirectly christening the unionid larvae "glochidia," and the second reporting the discovery that they parasitized fish.)

This bibliography and its notes, arranged chronologically, is weighted toward more recent literature, but the most important early papers are listed. The result, with its notes, constitutes a history of the topic. Besides reproduction, they deal with other aspects of propagation, especially the fishes and other hosts

(some parasitize mudpuppy salamanders) of the unionids, and translocation efforts aimed at saving unionid species from extinction because of habitat (or host) destruction. Ninety-one pages are devoted to this chronological listing.

Three appendices complete the book. Appendix A, "Unionoideans and their reported host(s)," alphabetically lists the mussels by species, with common name, host fish, time of year it breeds, and information source. Appendix B cross-references Appendix A by host species, listed alphabetically (by common name, except for unfamiliar foreign species, which are in Latin). For each fish species, the unionid(s) that parasitizes it, and the source are given. Appendix C is a very useful "Categories of Reference," listed alphabetically by author. For each source in the bibliography, the topics it covers are given: artificial culture; reports of potential hosts; growth and development and reproductive structures; specific ecological needs; translocation reports; and parasitism on the unionids themselves.

I am not recommending that you purchase copies of this book for everyone on your gift list. It doesn't have a good enough plot for a best-seller, and with its only illustration a (rather attractive antique) drawing of various intimate views of glochidia at work and play, it'll never make a coffee table ornament, large format though it is (8½" X 11") But if you are at all interested in the "river mussels," now considered one of our vanishing natural treasures, Dr. Watters' very well done and, incidentally, well crafted, book is sure to be a valuable and much-used addition to your reference library.

—L.S.

OCEAN PLANET...

A Totally Immersing Experience

The Smithsonian's National Museum of Natural History in Washington, D.C. has developed a major new traveling exhibition, "Ocean Planet." Based on the concept that Earth is really an ocean planet and we are all seafarers who have a hand and a stake in what happens to the seas, the exhibition celebrates the oceans' spectacular diversity and examines the environmental issues they face. It is a multi-media production, using photos and live theater, computer animation, specimens and artifacts, videos and sculpture.

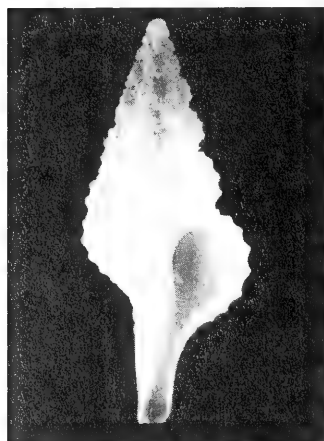
At the Smithsonian through Jan. 2, 1996, it will go to the Presidio of San Francisco March 30-June 23; Columbus Center in Baltimore July 27-Oct. 20, 1996; The American Museum of Natural History, New York Nov. 23 1996-Feb. 16, 1997; the Bishop Museum in Honolulu July 12 - Oct. 5, 1997; Museum of Science and Industry, Chicago May 23-Aug. 15, 1998; and Museum of Science, Boston Sept. 19-Dec. 13, 1998. Seven other cities will be added to the schedule.

THE OLD SHELL GAME

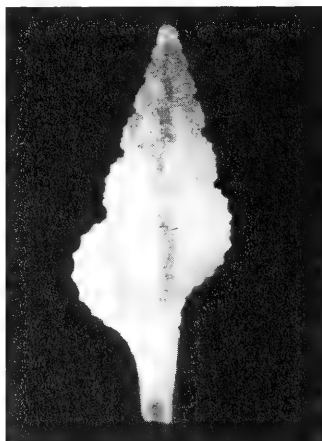
Collectors of oriental antiques prize *kai-oke*, handsome lacquered storage containers, either round or hexagonal, decorated with etched metal fittings, gold lacquer and silken cords and tassels. These boxes were containers for the pieces in a popular Japanese parlor game, *kai-awase*, or the "shell matching game." Dating from ancient times, perhaps as early as 794, and played until the end of the Edo period in 1868, this game was based on the premise that none other than a matching pair of clam valves will fit together properly. One hundred and eighty clam shells, (360 halves), of a clam species the Japanese call *hamaguri* were the playing pieces. Half shells were divided between two groups of players. One team put forth a valve for the other team to match. The shells also came to be beautifully decorated. In one version, the valved were inscribed with bits of poetry, which had to be capped with the following lines in the matching valve.

WESTERN ATLANTIC FUSINUS Part 2

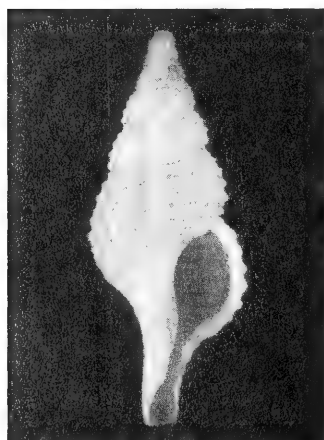
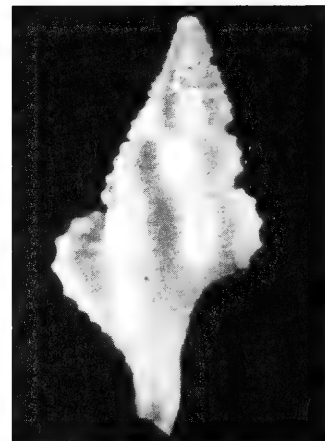
by Kevan and Linda Sunderland



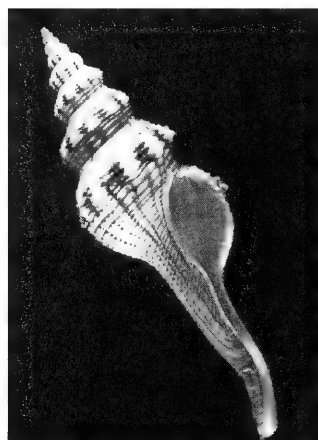
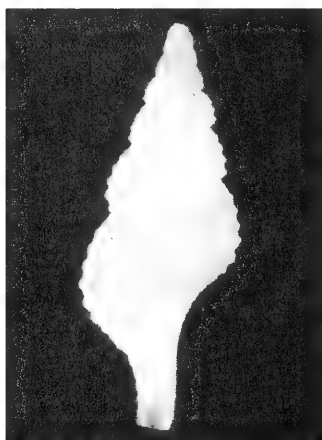
Fusinus aepynotus (Dall, 1889). 16mm. 600', dredged, Florida Straits, off Key West.



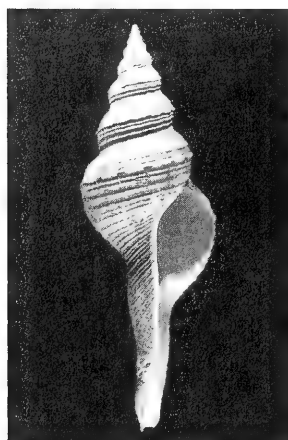
Fusinus alcimus alcimus (Dall, 1889). 15mm. 600', dredged, Florida Straits, off Key West.



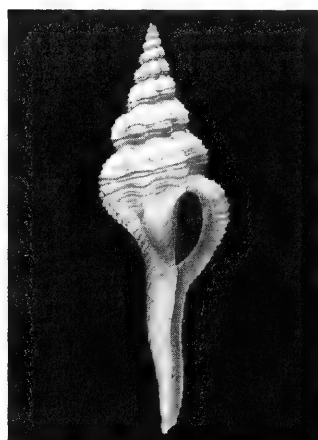
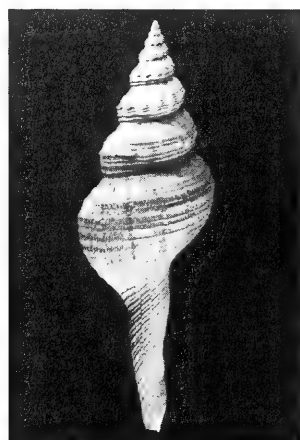
Fusinus benthalis (Dall, 1889). 14mm. 600', dredged, Florida Straits, off Key West.



Fusinus caboblanquensis Weisbord, 1962. 80mm. 3', Turtle grass, Amuay Bay, Venezuela.



Fusinus closter (Philippi, 1850). 40mm. 300', dredged off Egmont Key, W. Florida.



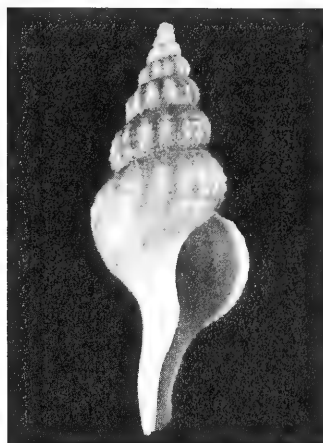
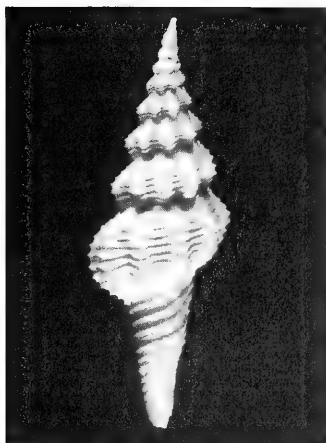
Fusinus dowianus Olsson, 1954. 92mm. 60-100', muddy sand, E. Honduras.



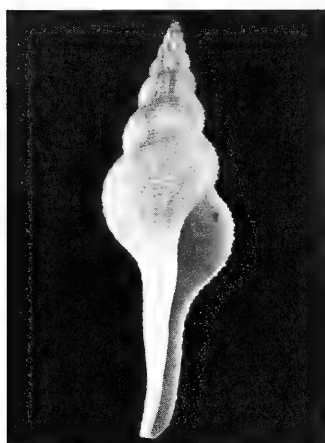
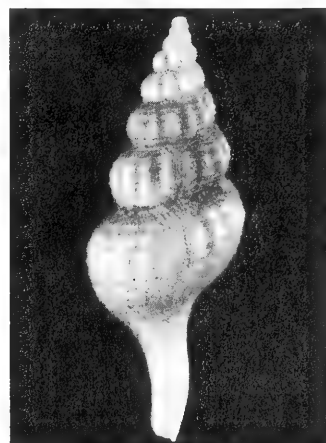
The intent of these centerfolds is not necessarily to distinguish among valid and invalid species, but to illustrate taxa that are not commonly seen in popular literature, solely for the information of the collector.



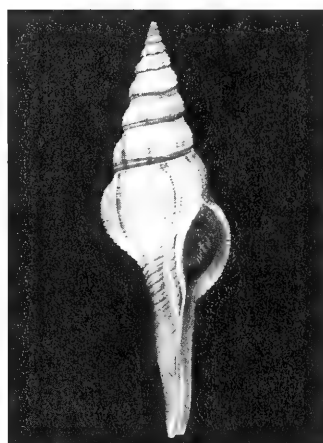
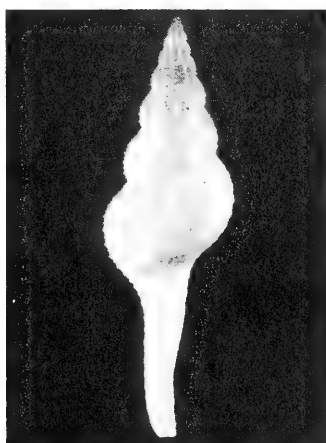
Fusinus eucosmius (Dall, 1889). 80mm. 200', by shrimper off Contoy Light, Mexico.



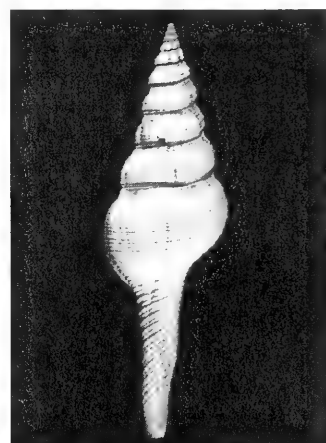
Fusinus frenguelli (Carcelles, 1953). 35mm. 150', by fishermen off S. Brazil.



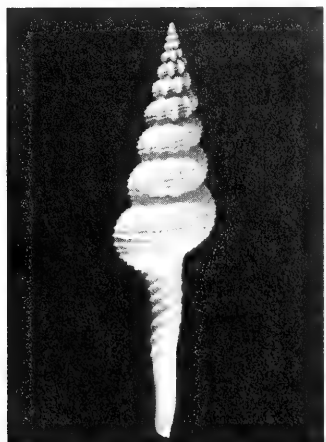
Fusinus helenae Bartsch, 1939. 40mm. 300', dredged off Egmont Key, W. Florida.



Fusinus marensis Weisbord, 1962. 82mm. 350-400' by shrimper, Gulf of Venezuela.



Fusinus stegeri Lyons, 1978. 104mm. 800', dredged off Egmont Key, W. Florida.



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 Dall, W.H. 1881. Report on the Mollusca, Part II. Gastropoda and Scaphopoda. Reports . . . on the steamer BLAKE. Bull. Mus. Comp. Zoo. Harvard. Vol. XVIII, p. 1-492.
 Lyons, W.G., 1978. *Fusinus stegeri* (Gastropoda: Fascioliariidae), a new species from the eastern Gulf of Mexico. *The Nautilus* 92(2).
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 Rios, E. C. 1985. Seashells of Brazil.
 Snyder, M.A., 1984. *Fusinus lightbourni* (Gastropoda: Fascioliariidae), a new species from Bermuda. *The Nautilus* 98(1).

Note: In Part I [Vol. 23(3) September, 1995], "*Fusinus* species from 150 fathoms off San Salvador, Brazil" should have read "off San Salvador, Bahamas."

NEWS FROM HAWAII

by Sally Gray Nottage

The Natural Energy Laboratory Authority of Hawaii (NELHA), is the only location globally that continuously pumps seawater from 2,000 feet below surface (you should see the size of the *Bulla* shells from an outfall area!). Research and commercial projects are currently being conducted there in ocean thermal energy conversion, aquaculture, chilled agriculture, and other marine-related technologies. These are all reputed to be non-polluting closed systems.

You're wondering what all this has to do with COA, I'm sure. In the past, NELHA has been one of my favorite collecting spots, my favorite investment is located there (CYANO), and now my step-son Jacob attends school at the Explorations Academy, on site. And I do mean on-site! An old, pale 50' trailer on hot black lava with an ocean view of cliff-pounding waves. Dr. Gary Rosenberg asked in the June *American Conchologist*, "Where will the next generation of shell collectors come from?" That concern has been frequently expressed in recent years, and it, along with my fears that kids today don't read enough, can't spell well enough, and don't seem to have any interest in examining tidepools or looking under rocks, got me involved with Jacob's new school. Explorations Academy, directed by Mr. Bill Worner and affiliated with Konawaena High School, received a National Science Foundation grant to encourage its concept. With a student body of 50 teens, grades 11-12, Mr. Worner, three other teachers, and hands-on help from experienced volunteers including parents, the school is a worthy experiment. I am trying to be one of those parents.

Mr. Worner works toward an integration of educational topics, giving the students powerful life skills. I see it as a sort of Peace Corps for teens who choose real world projects: from hydroponic gardening — seed to market — to aquaculture of seahorses. (This team flew to Oahu to help a supplier get his seahorses to spawn.) Their location in proximity to NELHA and the sea is ideal for sea-oriented projects. Reef fish in

tropical aquariums and tilapia farming are other marine projects the teens have undertaken. A team also does reef-walks for groups in which they point out marine organisms and suggest ways to keep the reef clean. In one six-week period they gave tours to over 1,000 children and 130 adults.

Traditional subjects — math, physics, social science — are incorporated non-traditionally: students relate and combine subjects through a daily journal, oral presentations, letters, and team projects. Their school supplies often include sunscreen, hat, water bottle and reef walkers, with picnic tables in lieu of desks.

Where does COA fit in? Here's my idea: I met with 4 interested students, explaining conchology, the organization of COA and the magazine, *American Conchologist*. I also showed them copies of our resolution of June 26, 1995, and included what Dr. Rosenberg called the role of conchologists: "monitors of species and environments...[who] take the traditional role of observer[s] of nature and show that the careful observer can also be a protector of nature. By starting projects to document their local faunas, shell clubs [and I hope schools too - SGN] can not only help to safeguard mollusks and their environment, but also become more visible in their communities. Changes in fauna might reflect changes in global climate, yet nobody seems to be looking.*"

I told them COA would give them space in *American Conchologist* if they came up with shell-related articles to interest our readers. (COA members, I welcome your suggestions for them too.) The group liked the idea of naturalists and interest picked up when I mentioned COA educational grants in malacology. I gave them publishing deadlines and offered help editing and getting their work to editor Lynn Scheu. We'll see what comes of this. Watch for news and articles in future issues. And watch, down the road, for some of these students to become seriously interested in shells, as a career or as a hobby.

* See also note on warming Pacific waters on page 20.

76-726 D, Huelalai Drive, Kailua-Lona, Hawaii 96740

PECTENS, PECTENS, PECTENS!

Pectens seem to be the rage these days. Our own Carole Marshall has been keeping us up to date on the Caribbean species, but if you are interested in pectens worldwide, there are several other articles in recent publications. *Australasian Shell News* (formerly *Australian Shell News*) 89: 1-3, published Terry Carless' "Pectinoidea of South-East Queensland." (Write: Dr. John Stanisic, Queensland Museum, P.O. Box 3300, South Brisbane, Q'ld. 4101.)

Basteria (Vol. 59, No. 1-3, pp. 1-88, 1995) has Henk H. Dijkstra's Part 1 of "Notes on taxonomy and nomenclature of Pectinidae," dealing with preoccupied names. This first part deals with the taxa *aurantius* and *aurantiacus* and proposes a new name for *aurantiacus* Adams & Reeve, 1850, *Anguipecten picturatus*. (Dr. A.C. van Bruggen Nationaal Natuurhistorisch Museum, Raamsteeg 2, Postbus 9517, 2300 RA Leiden, The Netherlands.)

The Strandloper, Bulletin of the Conchological Society of Southern Africa (No. 242, June 1995), offers "Pectinidae and Propeamussiidae in South Africa" by Markus Lussi, a short article and figures of 28 pectens on 2 color plates. (7 Jan Booyesen Str. Annlin, Pretoria 0182, South Africa.)

AND SPEAKING OF PECTENS:

There's a magazine on the strand, *Vita Marina*, which ought to be just the thing for a lot of shell collectors. It is an international quarterly on marine zoology, with emphasis on molluscs, and articles by Moolenbeek, Voskuil, Onverwagt, Kronenberg, Finet and others. Volume 41, No. 1 was devoted wholly to a "Review of the European Pectinidae," by H.P. Wagner, a heavily and beautifully illustrated monograph. Note that there's also a very informative little newsletter, *Spirula*, which goes along with the subscription. It contains book reviews, letters, shells on stamps info, a new species round-up and a very useful recently published literature listing, by families, as well as accounts of shelling trips.

Both are excellently done and highly recommended. They are both bilingual (English and Dutch), and the English translations are garble-free and fluent. Typographical errors are at a minimum in *Vita Marina*'s 32 pages, which also have snazzy art work and graphics, many illustrations and some color plates. Shelling is a worldwide hobby, our collections span the globe, and it's not a bad thing to get a better world view of conchology/malacology by subscribing to a foreign publication or two. U.S. prices: Surface Mail: \$44, Airmail: \$50. *Vita Marina*, Postbus 64628, 2506 Ca Den Haag, Netherlands.

ANACHIS VELIGERS

by Robert Robertson

Dr. Amélie H. Scheltema, an Invertebrate Zoologist at the Woods Hole Oceanographic Institution, Massachusetts, published in 1969 a nice study of the developing veligers of one of the shallow water Massachusetts species of columbellid, *Anachis avara* (Say, 1822). Her drawing of a rather angry-looking veliger 24 days after hatching from the egg capsule is reproduced here (Fig. 1). It is in the "creeping-swimming stage . . . ready to metamorphose."

I thought it might be fun to compare the drawing with two photographs I took of two living *Anachis avara* veligers freshly collected from Woods Hole plankton some years ago. The first thing that one notices about the photographs is that the whole animal is not in focus. The outline of the shell does show (with the anterior siphonal canals to the right). The photos show mainly the two-lobed velum (veil), which is held above the shell (the latter shows in transparency). Light photography through a compound microscope does not have enough depth of field to show a whole veliger, partly because most are tiny, and partly because, unless restrained, it moves. Without restraint, it would be like trying to photograph a bee in flight (Robertson, 1994).

The drawing shows the animal's right velar lobe larger than the left. The photograph shows this too. The front half of a snail is probably lighter in weight (consisting in large part of mantle cavity) than the spire. It is probably no coincidence that the larger velar lobe is invariably on the side of the spire. This may help to balance the minuscule "load."

Department of Malacology, The Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103-1195

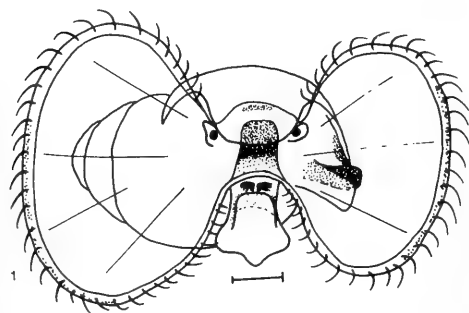
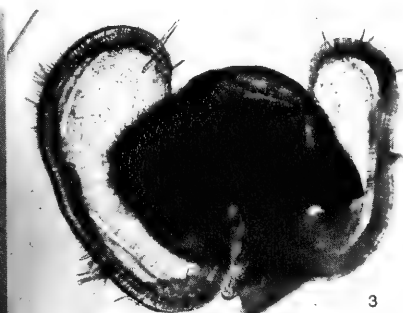
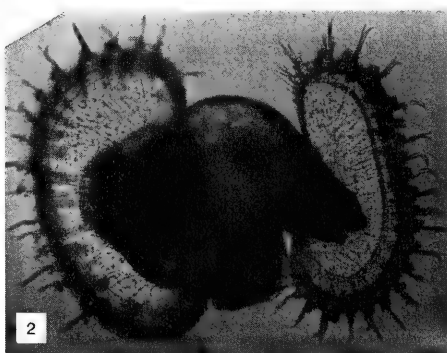


Figure 1. Late veliger of *Anachis avara*. Reared in the laboratory, Woods Hole, Massachusetts. The scale line is 0.1 mm long. From A. H. Scheltema (1969).



Figures 2-3. Photos of two fairly late veligers of *Anachis avara* from Woods Hole plankton. Fig. 2 shows the velar cilia beating. Fig. 3 shows most of the cilia pulled inwards. The animals are, respectively, in swimming and resting phases.

The drawing shows the velar cilia (hairs) schematically. The photo shows that actually there are very many more cilia, and that they beat in waves. In dextral veligers the waves go round the two velar lobes clockwise (viewed from above). Fig. 2 shows the waves in a "frozen" moment.

Fig. 3 shows the veliger with most of its velar cilia pulled inwards. When this happens the tiny animal slowly sinks in the water column. Then the cilia act to propel the veliger upwards again, in a spiral.

On the human's right side, Fig. 2 shows the food tract inwards from the edge of the velum. Here, much smaller cilia collect food particles from the plankton and transfer them to the mouth (near the front of the foot). The large cilia may help to winnow in the food, but their prime role is locomotory. Fig. 2 also shows the fine radial muscles used to draw the velar lobes inward.

The photographs do not show the eyes, the right tentacle (which develops before the left one), and anterior siphon — all of which show well in the drawing. As in the adult, an operculum is present, but it is intentionally not shown in Fig. 1. The moral: drawings and photographs of living veligers show different things. Ideally, one should take photos at several different levels of focus.

LITERATURE CITED

- Robertson, R. 1994. Wentletrap egg capsules and veligers: what they are and how to see and study them. *American Conchologist* 22(4): 5-6.
Scheltema, A.H. 1969. Pelagic larvae of New England Gastropods. IV. — *Anachis translirata* and *Anachis avara* (Columbellidae, Prosobranchia). *Vie et Milieu*, sér. A, 20:94-104.

GREAT SCALLOP SEARCH TURNS UP 6

The scallops are coming back to Tampa Bay! The return of decent water quality has brought this bonus, mentioned in *Suncoast Shorelines*. Unable to survive in cloudy, low-salinity water, the once abundant *Argopecten irradians concentricus* had disappeared. This year's Great Bay Scallop Search may not have turned up many of the seagrass- and salinity-loving critters, but they were in new areas.

The next step is to reseed the bay. The current population is too low to repopulate on its own, so juveniles are being brought in for dispersal. Unfortunately, the scallops spawn only once and then die, so a bad year could be disastrous to the

project. Careful monitoring of the mesh cages of young scallops will be required until a healthy population is once more established.

LIFE'S BEGINNINGS PUSHED BACK ONCE AGAIN

Small jellyfish-like animals are now the oldest known multicellular life forms. Fossils of these creatures, 15 million years older than any previously known multi-celled organism, have recently been found in Mexico by a geology expedition from Mt. Holyoke College, MA.

Flotsam and Jetsam



GLORIA MARIS, the Belgian Society for Conchology quarterly, has completed a 5 part series on "The Conidae of the Solomon Islands," an illustrated alphabetical review treating all species and subspecies from that cone-rich area of the Pacific. It was written by their editor, A. Delsaerd. Part 1 was published in Vol. 27, in 1988. The alphabetical review of species begins in Part 2 published in Vol. 29, nos. 4-5, and continues in Vol 30, no. 1; Vol. 32 nos. 5-6; and Vol. 33, nos. 4-5. To purchase back issues of **Gloria Maris**, write the secretary of the Belgian Society, M. Robin De Roover, Vorsterslaan 7, 2180 Ekeren-Donk, Belgium.

The **GULF COAST SHELL CLUB**, located in the Panama City area of Florida, was forced to cancel its 1995 shell show. They were in the path of hurricane Opal, which did extensive damage to many area homes and businesses, flooded their clubhouse and the shell show's dining facility, and caused travel disruptions by severely damaging roads into the area. All of their members are fine, but some face months of repair work. We wish them well. The 1996 Gulf Coast Shell Club Shell Show is tentatively scheduled for September 14.

If you have a young relative or friend you are trying to interest in shell collecting, or some other collecting hobby, perhaps a membership in **YOUNG COLLECTORS CLUB** will do the trick. An organization of national correspondence clubs for young people ages 7 to 13, which takes them seriously and encourages them to develop, explore and maintain an interest in collecting. a membership brings an official ID card, a membership certificate complete with gold seal, a club pencil and a subscription to **The Trading News**, a magazine which is filled with collection information, ideas and tips. The club also sponsors a pen pal list. Annual dues are \$12.95. Write P.O. Box 5504, Coralville, IA 52241.

Global Warming may be affecting more than the weather. Ocean temperatures are rising as well. Four scientists from the Monterey Bay Aquarium research division, part of a 60 year study on the California Tidal Zone, report that whole populations of marine animals, including mollusks, are migrating north with the warming water. If this warming trend continues, it may revise our molluscan faunal province charts, and may indicate major climactic shifts already underway. — from information reported in the **Astronaut Trail Capsule**, September, 1995.



LETTERS:

Tom Watters, writes that he thinks dealers should have email numbers: "They could email their lists, we could email our orders. Fast, cheap, simple."

Aquatic Ecology Lab, OSU, 1314 Kinnear Road, Columbus OH

What about it? How many of you have e-mail addresses out there and would like to use them for ordering shells? Let's hear from you. In fact, how many of you have e-mail capacity? Send your answer and/or name and e-mail address to us, via e-mail. Until your editor gets up and running and has an address of her own, send your comments to COA member Debbie Wills at dwills@hiwaay.net. (See Debbie's article on the Net, p. 11)

Mrs. Chris Bunyard writes that the Port Phillip Bay Shell Group (Melbourne area) is holding a shell show in February, 1996, the first ever in Melbourne.

021 Hillcrest Road, Eltham Nth., Victoria 3095, Australia

COA member **Marcia Usiskin** of Toronto, Ontario writes to tell us of a current address for Mexican artist Alina Monterrubio who created that spectacular beaded *Strombus* pictured in the December 1994 issue of **American Conchologist**. Her address is now #19 Callejon San Antonio, San Miguel de Allende, GTO., Mexico 37700. Telephone: 011-52-415-25215. *Thanks, Marcia!*

Eddie Beulke writes:

Re: Olive Peel's letter, June 1995, I too have been caught short, with parcels to South Africa, Poland, Uruguay, Portugal and Israel. I usually exchange a few letters first to make sure

the mail is getting through. I then insist on sending the first parcel, leaving it up to the receiver to decide what they are worth to him. . . . If I am then overwhelmed by the quantity or quality, I then send something else to even it out.

Don't forget, too, that people die. . . . countries are attacked by an aggressive neighbor. . . . Perhaps a regular column can be started called "Where is . . .?" It could give the name and last known address of a colleague and the person wishing to know. In any case, good luck to all the Olives and Olivers of the world, but I for one would not have found myself at two COA conventions if it hadn't been for my exchanges. . . .

P.O. Box 591, Morwell, Australia 3840

FRESH WATER, SALT WATER, AND SEALIFE

We read in the **Broward Shell Club Newsletter** which got it from the **Orlando Sentinel** that Florida's thirst is diverting ever more fresh water from the Everglades, water that would flow into Florida Bay and dilute its salinity if its destiny were left to nature. So Florida Bay is getting saltier and saltier. University of Georgia ecologist James Porter says the excessive saltiness is causing the warmer water to sink, rather than float along the surface as it should, because it is weighted down with salt. The higher salinity and temperature produce cloudiness and algae which damage the coral; in seven years, almost half of it is gone.

On the other hand, the pink shrimp catch in Florida Bay is up 64%, the first increase since 1987, and the jump in harvest may be caused by an infusion of fresh water into the Bay, stemming from a new sewage treatment method which reduces pollutants in sewage by 90%. And the coral there is growing.

COA JULY 15-19, 1996:

DIAMONDS IN THE SUN

Gentle breezes, white sandy beaches, lovely sunsets, tropical ambience — what more could you want in a setting for the 1996 Conchologists of America Convention?

TradeWinds Resort on St. Pete Beach is a four-diamond beach resort located on an island 7 miles long and 1/4 mile wide. The resort spans 18 lush tropical acres dotted with meandering waterways, charming white footbridges, and Victorian gazebos.

St. Pete Beach is located in Florida's largest metropolitan area. Tampa Bay has long been known for its cultural diversity, balmy climate, active lifestyle and velvet white beaches (three of which rank in the national top twenty). The St. Petersburg area also holds the Guinness Book of World Records title for the most consecutive sunny days — 786! The Bay area averages 361 sunny days per year, and is cooled by a sea breeze in the summer. However, bring your umbrellas, because Florida's natural air-conditioning (late afternoon showers) is in full swing in July.

HOTEL ACCOMMODATIONS: TradeWinds Resort, only 30 minutes (26 miles) from Tampa International Airport, is just 10 minutes off Interstate 275. Located at 5500 Gulf Boulevard, St. Pete Beach, the resort has 577 guest rooms: 370 hotel and parlor rooms, 200 suites, and 7 penthouse and hospitality suites. Each room is comfortably furnished with many special touches such as wet bar, refrigerator, coffee maker, and toaster. Smoking and non-smoking rooms are available: specify which when making your reservation with the Group Reservations Agent.

ROOM RATES AND INFORMATION: Group room rates for the Convention are:

Hotel rooms — \$85.00 per night (1-2 people)

One bedroom suites — \$125 per night (based on availability)

Two bedroom suites — \$185 per night (based on availability)

Three bedroom suites — \$270 per night (based on availability)

Deluxe penthouse — \$340 per night (based on availability)

Rates are subject to local and state taxes (currently 11%).

These rates will be available two days prior to and two days after the convention, based on availability. Cutoff date for reservations at these rates is **June 13, 1996** — after that date discounted rates are subject to availability.

Each room is based on single or double occupancy. An extra person charge of \$15 will be applicable for each additional person per room per night.

Children 12 and under are free in rooms with parents. Children 13 and older are subject to guest charge. There is a Children's Activity Center which provides many activities daily. Many services are complimentary, while others have a nominal charge.

TO MAKE RESERVATIONS: Call 1-800-808-9833 (USA and Canada). Overseas attendees can call (813) 367-6461 or FAX (813) 367-4567. Reservations require a first night's deposit (check, money order, or major credit card). If you use FAX, be sure to include your name, **Conchologists of America Convention**, address, city, state or country, zip, phone number, arrival date, departure date, number of people in room, credit card number, expiration date, name as on card, and of course your signature. Group Reservations department is open until 11:00 p.m. eastern time, but reservation questions can best be answered between the hours of 8:00 a.m. and 6:00 p.m.

PROGRAMS: Those who wish to give a program should send their resumes to: Program Committee, P.O. Box 49191, St. Petersburg, Florida 33743-9191. Have you shelled in an interesting or unusual habitat lately? How about sharing it with



us at the convention. Get your slide program resumes in NOW!! Be sure to include method of presentation, etc.

AUCTION: Donations for the Auction, raffle items and door prizes should be sent to Auction Committee, c/o John Jacobs, 202 Soldier Court, Seffner, FL 33584.

BOURSE: Anyone interested in participating in the Bourse should contact the Bourse Chairman, P.O. Box 49191, St. Petersburg, FL 33743-9191.

Plan now to attend, as we explore shelling habitats through programs and field trips, and celebrate the Diamond Anniversary of the St. Petersburg Shell Club.

AUCTION ITEMS NEEDED FOR 1996 CONVENTION

Another successful COA convention has come and gone, but it's never too early to start thinking of the next one. July '96 will be upon us before we know it. Your donations are the key to every successful convention, so I hope you can send donations for 1996.

As the '96 Auction Chairman, I am requesting all COA members and dealers to donate high quality specimen shells. There will be an oral auction, silent auctions, door prizes, and a raffle. Shell-related items such as books, art, photographs, or other ocean-related items are greatly appreciated.

Please accept my sincere thanks for your help this year.

If there are any questions or comments, please feel free to contact:

John L. Jacobs
Auction Chairman '96
202 Soldier Court
Seffner, FL 33584
or call me at: (813) 689-2644

1996 WINTER & SPRING SHELL SHOWS & OTHER EVENTS

- Jan. 20-21 **Astronaut Trail Shell Show**, Melbourne, FL
Jim & Bobbi Cordy, 385 Needle Blvd.
Merritt Is., FL 32953 (407) 452-5736
- Jan. 26-28 **Greater Miami Shell Show**, N. Miami, FL
Frank R. Gomez, 1371 Westward Drive
Miami Springs, FL 33166 (305) 887-3230
- Feb. 2 - 4 **Broward Shell Show**, Pompano Beach, FL
Wayne M. Harland, 2549 SE 15th St.
Pompano Beach, FL 33062 (305) 942-3950
- Feb. 3 - 4 **V Illèmes Recontres Internationales du Coquillage**,
Paris, France
M. & D. Wantiez, 88, Rue du Général Leclerc
795210 Saint Gratien, France (1) 34-17-00-39
- Feb. 9-10 **Southwest Florida Conchologist Society Shell Show**,
Fort Myers, FL
Anna Marie Nyquist, 18372 Cutlass Drive
Ft. Myers Beach, FL 33931 (941) 466-6391
- Feb. 16-18 **Sarasota Shell Show**, Sarasota, FL
Peggy Williams, P.O. Box 575
Talleavast, FL 34270 (941) 355-2291
- Feb. 23-25 **Naples Shell Show**, Naples, FL
Gary Schmelz, 5575 12th Ave. S.W.
Naples, FL 33999 (941) 455-4984
- Feb. 24-25 **Melbourne Shell Show**, Melbourne, Australia
Lorna Marrow, 14 Field Street
Hampton, Vic. 3188, Australia (3) 9598-1383
- Mar. 7 -10 **Sanibel Shell Show**, Sanibel, FL
Charles Barr, P.O. Box 990
Boca Grande, FL 33921 (941) 964-1034
- Mar. 14-16 **Marco Is. Shell Club Show XVI**, Marco Is., FL
John Maerker, 365 Henderson Court
Marco Island, FL 33937 (941) 394-3438
- Mar. 15-17 **St. Petersburg Shell Show**, Treasure Is., FL
Bob & Betty Lipe, 440 75th Avenue
St. Petersburg Beach, FL 33706 (813) 360-0586
- Mar. 15-17 **Treasure Coast Shell Show**, Stuart, FL
Ruth Wischmann, 5000 S. Federal Hwy., #194
Stuart, FL 34997 (407) 220-1956
- Apr. 26-28 **St. Louis Shell Show**, St. Louis, MO
Vern Stubblefield, 8028 Orlando
St. Louis, MO 63105 (314) 863-5207
- Apr. 28 **Pacific Shell Club Show**, San Pedro, CA
Frank Jewett, 1739 Vallecito Drive
San Pedro, CA 90732 (310) 514-8012
- May 4 - 5 **Sixth Belgium International Shell Show**, Aarschot, Belgium
R. De Roover, Vorsterslaan 7
2180 Ekeren-Donk, Belgium (3) 644-3429
- Jun. 15-16 **XVème Salon International du Coquillage**, Lutry, Switzerland
Dr. Ted W. Baer
CH-1602 La Croix (21) 791-3771
Switzerland FAX 792-1411
- Jun. 23-27 **Western Society of Malacologists Annual Meeting**,
San Diego, California
Hugh Bradner, 1867 Caminito Marzella
La Jolla, CA 92037 (619) 459-7681
- Jun. 29 - **American Malacological Union Annual Meeting**,
Jul. 3 Chicago, Illinois
Rüdiger Bieler, Div. of Invertebrates
Field Museum of Natural History
Roosevelt Road at Lake Shore Drive
Chicago, IL 60605 (312) 922-9410, ext.270
- 2620 Lou Anne Court, West Friendship, MD 21794-9521



Bolma massieri

Werner Massier

SPECIMEN SHELLS

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CONCHATENATIONS

by Gary Rosenberg

I continue here the theme of molluscan conservation, with a summary of an essential book published this year, *The Conservation Biology of Molluscs*. The 84 page volume, a collection of papers edited by E. Alison Kay of the University of Hawaii, is Occasional Paper of the IUCN [International Union for the Conservation Of Nature and Natural Resources] Species Survival Commission No. 9, available for about \$15, from IUCN Publications Services Unit, 219 Huntingdon Road, Cambridge CB3 0DL, United Kingdom.

The first section consists of papers from a symposium on molluscan conservation at the 9th International Malacological Congress, Edinburgh, Scotland, in 1986. The publication delay for these papers is regrettable, given the critical endangerment of many species, but several authors have added updates for 1986-1992. The second section, written in 1993 or 1994, reports on molluscan diversity, with detailed recommendations for actions necessary for conserving this diversity.

In Chapter 1, E.A. Kay looks for common patterns among 1130 species and subspecies that are threatened, endangered, rare, or recently extinct. The list is restricted geographically: 40% North America, 19% Australia and New Zealand, 16% Europe, and 33% oceanic islands. Part of this pattern is biological (obviously species restricted to oceanic islands are vulnerable) and part is political (much of the world has not reported data on endangered mollusks). Only 2% of the species considered are marine; the rest are about evenly divided between land and freshwater. Taxonomic groups are affected in different ways. For example, 83% of the listed prosobranchs are hydrobiids or pleurocerids. The hardest hit land snails are the achatinellines, amastriids, and partulids of Pacific islands, bulimulids of the Galapagos, and rhytidids of New Zealand. The 197 bivalves listed include only eight families; 81% are unionids. Common factors include highly restricted distributions, specialization in particular foods and habitats, and late maturity, low fecundity or specialized reproductive habits. As such species go extinct, the world might be reduced to a few wide-spread, generalist species of mollusks.

In Chapter 2, several authors consider specific geographic areas: G. Coppo discusses the Galapagos; W.F. Ponder, the Australian Great Artesian Basin; and H. Waldén, Sweden and Madeira. Ninety percent of Galapagos land snails are bulimulids; of 65 endemic species, one-half to two-thirds are now extinct. Factors affecting native vegetation and the snails living thereon include cutting forests for agriculture, uncontrolled fires, introduced plants replacing native ones, and grazing. Such introduced predators as fire ants and rats have depleted Galapagos snails, as has climate change. The Galapagos, once a laboratory for evolution, are now a laboratory for extinction, a microcosm of worldwide problems.

The springs of the Australian Great Artesian Basin are essentially unique ecosystems, "aquatic islands in an arid sea," with many endemic species, including 24 species of hydrobiid snails. Many springs and their faunas have become extinct as ground water levels have dropped due to water extraction for human use. Trampling and fouling of habitats by livestock and direct modification by humans also threaten springs. Preservation of the spring species requires preservation of these habitats. Political awareness of the value of these springs is increasing, but their ultimate fate is still in doubt.

The main cause of mollusk decline in Sweden is forestry, not only the cutting of forests, but also conversion of wetlands and pasturelands to monocultures of commercially important trees. Because none of the 93 species native to Sweden is endemic, conservation must focus on maintaining diversity rather than preventing extinction. Madeira, with 800 sq. km to Sweden's 450,000, has 194 species of land snails, 171 (88%) endemics. This fauna has a relict character, many species belonging to genera and subgenera now extinct in Europe. Seventeen of the endemics have not been collected in 100 years despite intensive effort; 22 are very rare, and 25, rare though not currently threatened. The main cause of extinction is destruction of damp laurel woodland. Drier-land species are less vulnerable to human impacts.

Conservation methods occupy the third chapter. S.M. Wells considers captive breeding; N.A. Holmes, marine reserves; and J.H. Jungbluth, active management. The seven species of *Partula* in Moorea, Society Islands went extinct in the wild between 1981 and 1987 after introduction of *Euglandina rosea* in 1977, though several species still survive in lab populations. Snails often are easy to raise in captivity — zoos could maintain endangered species of snails as they do insects. The ultimate goal of captive breeding should be reintroduction to the wild, which requires habitat maintenance or restoration. The United Kingdom's Marine Nature Reserves promise to be an effective tool for conservation, providing protection from pressures of fishing, pollution, and dredging; six voluntary areas already exist, and statutory reserves are being established to extend protection below tideline. In Germany, *Margaritifera margaritifera*, the freshwater pearl mussel, with aging populations and no juveniles, requires active management; this includes securing stream conservation areas, restoring water flow and bank vegetation, transplanting mussels, and ensuring availability of host fish for the glochidial larvae. Given mussels' long life span, it might be several decades before age-balanced populations are restored.

Next, E. Wood and S.M. Wells analyze international shell trade — souvenirs, specimen shells, shellcraft, mother-of-pearl for jewelry, and industrial shell (ground shell, particularly giant clams, used in floor tiles and pottery glaze). Judging the impact of this trade is difficult: import and export figures often combine mollusks with corals, and rarely distinguish species; trade figures often under-estimate; and shells are sometimes by-products of human consumption of the animals. Nonetheless, the trade is huge. Worldwide demand for the commercial top shell, *Trochus niloticus*, reached 6,000 metric tons in 1980; Japan imported almost 8,000 tons of unworked shell in 1985, largely freshwater mussels from the United States; imports of shellcraft items from the Philippines to the United States topped \$10 million in 1986; and Singapore imported almost 8,000 tons of powder and waste shell from Peninsular Malaysia in 1982.

Although no species of marine mollusks are threatened due to over-collecting, depletion of key species in some areas could affect ecological balance. Commercial collecting often damages habitats, by dredging, trampling, or coral removal. Some species, like *Strombus gigas* and *Tridacna*, have already been overfished; species and habitats must be managed for sustainable yield. Regulation of catches is difficult because so many species are involved, so little life history information is available, and enforcement is almost impossible. Protected

areas and less destructive collecting methods might also help, as would controls on exports and imports, and mariculture.

The concluding chapter, by Kay, is "Hug a slug — save a snail: a status report on molluscan diversity and a framework for action." I cannot attempt to summarize the wealth of information in this chapter, but several statements stand out: "Molluscs play an essential role in almost every known ecosystem on land and in the sea." "Molluscs comprised 8.2% of the world's fisheries catch in 1990. . . ." "Second only to arthropods in diversity of species, molluscs may be second to none in terms of their distribution in space and time and their versatility in field and laboratory. . . ." Dr. Kay makes the following recommendations:

1. Acquire and manage threatened habitats and islands, in aquatic ecosystems, on continents and coral reefs for the conservation and protection of the native molluscan biota.

2. Develop the data base necessary for knowledge of molluscan diversity.
3. Prevent the introduction of alien species that have negative impacts on native mollusc species and control and eradicate these exotic species where such introductions have already occurred.
4. Establish self-sustaining captive populations of endangered mollusc species and support their eventual re-introduction into their native habitats.
5. Promote public awareness and concern for molluscan conservation programs.

The recurring theme of this volume is that conserving habitats is the key to conserving diversity.

FRUSTRATIONS AND EXTENSIONS: Problematic and Ignored Species; and Redefinition of Two Geographical Boundaries.

by Emilio García

On *Haustellum bellus* (Reeve, 1845) (Figure A) Until recently, *H. bellus* was found only along the northern coast of South America. However, several years ago I obtained two specimens said to be collected in a lobster trap in Gorda Banks, off the northeastern coast of Honduras. They were collected crabbed, but freshly dead, together with other normal species collected in that area, particularly *Pleioptigma helenae*. Since this area was much farther north than the established range, I was not sure about the accuracy of the locality, even though I knew that this particular fisherman fished the area regularly. Then about a year ago, I acquired from a different fisherman a live-collected specimen, this time from Pedro Bank, Jamaica, and also from a lobster trap. I asked him about the accuracy of the locality data, and he was quite sure of it. Two days later I went by his hut again and asked him if he could get me more specimens of "that shell from Colombia." He corrected me, saying it was from Jamaica.

Although some years ago many boats from Roatán were venturing into the coastal waters of Colombia, this custom did not last very long because a number of boats were lost to pirates who wanted the vessels for drug smuggling. A long-time acquaintance of mine was such a casualty. While he and his crew were sleeping on his boat just off the Colombian coast, some men climbed on board with guns and tried to overcome them. His crew was also armed, and fought them off, but not before my friend was shot in the head. Fortunately, he survived. Such occurrences have kept Honduras boats from going there. Many boats in Roatán still come to port "from Colombia," but they have been fishing in the waters around San Andrés Island, which belongs to Colombia but which is located off the Central American coast and forms part of those offshore banks and islands that extend along Central America to Pedro Bank, Jamaica.

Haustellum bellus has traditionally been synonymized with *H. chrysostoma* Sowerby. If one takes into account the difference in compactness, coloration, sculpturing and habitat between the two species, one can arguably treat them as different species unless future studies prove otherwise.

On *Crassispira* (Gibbaspira) *dysoni* (Reeve, 1846) (Figure C) Lovell Reeve was a good friend of the famous 19th century collector, Hugh Cuming who, in turn, seemed to admire Mr. Dyson. Reeve says: "I have much pleasure in naming this shell, at the request of Mr. Cuming, after Mr. Dyson, whose adventurous researches after objects of natural history in a country not the most healthy for European travellers are certainly worthy of being recorded." The country to which Reeve refers is Honduras, the type locality for this and the next species under discussion, *Columbella dysoni*. These two valid taxa have been omitted or synonymized in recent molluscan literature dealing with Gulf of Mexico-Caribbean fauna. Reeve's description, which conforms to the

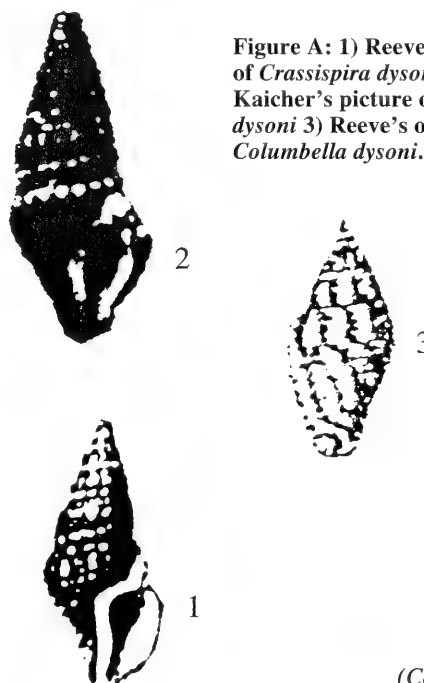


Figure A: 1) Reeve's original figure of *Crassispira dysoni* 2) Sally Kaicher's picture of *Crassispira dysoni* 3) Reeve's original figure of *Columbella dysoni*.

FRUSTRATIONS AND EXTENSIONS (Continued from page 25)

form of the species collected by divers off Utila, Honduras, is as follows: "Shell ovate, spire turreted, whorls concave and obtusely keeled round the upper part, rounded beneath, longitudinally ribbed, decussated with transverse ridges, aperture short, sinus large; chestnut brown, upper part of the whorls here and there interruptedly white-banded."

I have two specimens of this species from Ciudad del Carmen, Mexico, situated in the southwestern Gulf of Mexico, and not to be confused with Playa del Carmen, Mexico, on the Caribbean coast of Yucatán. Sally Kaicher's card #3941 pictures this form, which is somewhat different from the Honduras form but undoubtedly the same species. In her book, **Shells of Tropical West America** (1971, P. 720), A. Myra Keen relates *C. dysoni* to the Panamic species *C. (Gibbaspira) rudis* (Sowerby, 1834). Placement of *dysoni* in the subgenus *Gibbaspira*, characterized by a deep sinus, does seem appropriate. The next closest subgenus, *Glossispira*, has a shallow sinus.

On *Columbella dysoni* (Reeve, 1859) (Figure D) In 1988 I wrote in **Hawaiian Shell News** a short article entitled "A Rediscovered *Columbella* from Honduras." In it I compared *C. dysoni* with *Columbella mercatoria* because the two species had been synonymized by Dr. George F. Radwin in his study, "The Family Columbellidae in the Western Atlantic." A closer relative to *dysoni* is *Columbella rusticoides* Heilprin, 1887, both having a higher spire than *mercatoria*, the same habitat and less variable markings. Originally, I had found *dysoni* as crabbed specimens under rocks and assumed this to be its habitat. Soon after I sent the article to HSN I discovered them alive on the leaves of *Thalassia* in 3-6 feet of water. Gene Everson has found them in deeper water, also living on *Thalassia*. This habitat is the same as that of *rusticoides*, but different from that of *mercatoria*, which lives under rocks.

Columbella dysoni never has the stains that *rusticoides* has between the teeth, and normally has a thicker shell and lip and a rougher spiral sculpture. I presume that these last two characteristics made Dr. Radwin synonymize *dysoni* with *mercatoria*. The geographical distribution of *rusticoides* extends to the northwestern coast of Cuba, and Drs. Harold and Emily Vokes also list the species in their study, **Distribution of Shallow-Water Marine Mollusca, Yucatan Peninsula**. I don't know of anyone who has ever found *rusticoides* in Honduras.

I thank Dr. Emily Vokes for her help with the identification of *P. bowdenensis*. We should all be thankful for those professional malacologists who take time to help us. I also thank Mrs. Betty Jean Piech and the Delaware Museum of Natural History for providing a copy of Reeve's description and figure of *Crassispira dysoni*.

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Figure B. *Haustellum bellus* (47mm) Pedro Bank, Jamaica.

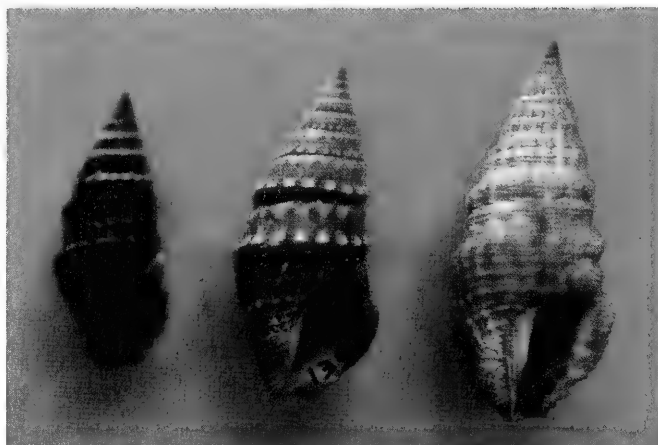


Figure C. *Crassispira dysoni* (Left) Utila, Bay Islands, Honduras (22mm); (Center and Right) Dredged, Ciudad del Carmen, Mexico (26 & 29mm).

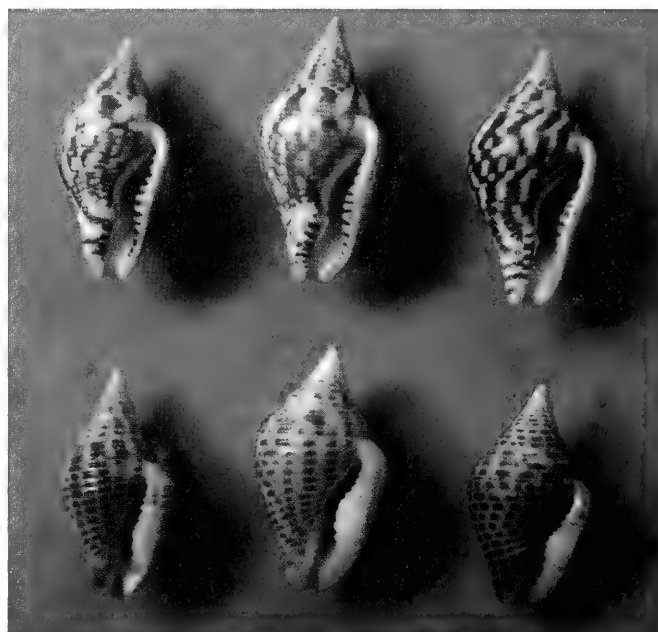


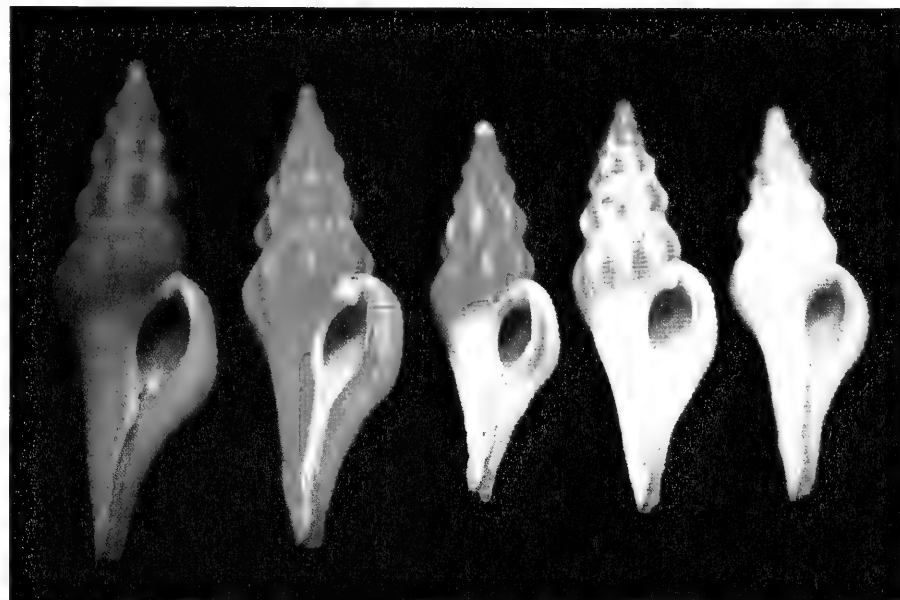
Figure D. (top row) *Columbella rusticoides* Port St. Joe, NW Florida (bottom row) *Columbella dysoni* Sandy Bay, Roatán I., Honduras.

COLOR FORMS OF *PSEUDOLATIRUS CLAUSICAUDATUS* (HINDS, 1844)

by Brian Hayes

Pseudolatirus clausicaudatus is one of the most interesting species of the Fasciolaridae family to be found along the coast of South Africa; an endemic, it is found only in deep water from about 100m to 200m deep. *Pseudolatirus* is an unusual genus, based on a fossil species, and more work will be required to determine if *clausicaudatus* is correctly placed there. As it stands, *clausicaudatus* is the only *Pseudolatirus* in S. Africa. Another species, *P. pallidus* Habe & Kuroda, 1961 reportedly has been found off Durban, but Dr. Kilburn (pers. comm.) of the Natal Museum believes this species only occurs north of South Africa.

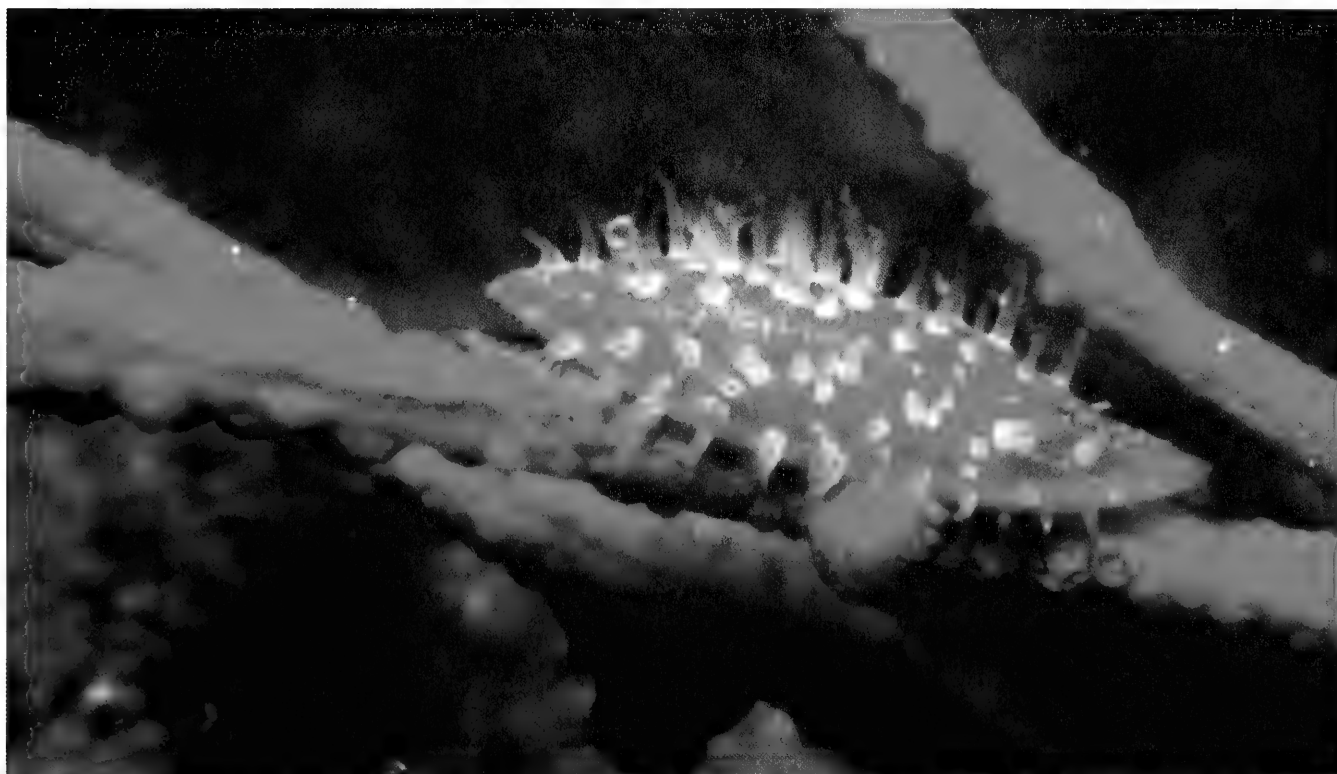
Pseudolatirus clausicaudatus has been found from Algoa Bay to the Transkei area, usually by trawler or crayfish boats. It probably lives on a sandy substrate interspersed with flat, sparse reef. It is an uncommon species but most frequently occurs around Algoa Bay area; of the few specimens that are brought up, many are disfigured by growth marks and encrustations. Adult size: 35-50 mm. An interesting feature of this attractive species is the color variation from white to dark brown. The color plate shows specimens from one extreme to the other, brown being commonest and albino, rarest.



P. clausicaudatus

As we obtain more specimens of the many South African species we are able to expand our knowledge of habitat, range and color variation along our coast. This is a long process but every bit of knowledge is worthwhile to build a picture of the distribution of our molluscs.

*P.O. Box 804, Port Elizabeth, 6000, South Africa



Steve Barry took this stunning underwater shot in 40' at St. Andrews State Park, Panama City, FL. It's a *Simnia uniplicata* wearing all its finery.

Conservation and the Environment. . .

EVERY SHELLER'S CONCERN

As we have information, letters, news clips and other items of interest, we'll print them under this heading, unless someone comes up with a better one.

A Letter From Mari Hughes:

Dear Editor and All,

Here goes a big secret: Where do you think we got many of our perfect shells that won the COA and other trophies and ribbons over the years? We don't tell others, usually, but this is war. We got them in the Dump!

Live, yes; operculum, yes; over a period of years, yes; and hard work and the most fun! It was at Port Canaveral in Florida. The people from all over the state took advantage, as well as from other states and a couple of the islands.

How did the dumps get there? They were brought in by truck daily over a period of years. We heard that the Port needed higher ground on which to build and it was their property. It was the scallop industry that dredged out in deep water and after picking through their catch on a conveyer belt, all the rest went into the truck. They clean-swept the ocean floor and eventually moved on. And the deepwater shells were of such quality that they were finer than some of us could get unaided.

. . . [We got many live specimens for our aquariums and] I even got two baby seahorses. Ran my legs off to get salt water and gather them in a jar to take home to our salt water tanks. And they lived and thrived! We entertained grade school students and girl scouts and friends young and old with the antics in our tanks. When a shell got too big, we took it to the inland waterway nearby and let it go.

So I second what you said on pages 18 and 19 of the June *American Conchologist* on commercial activity and not individual shell collectors being the culprits. And excuse me while I shed a tear for the good old days now that Cocoa Beach shelling is gone.

P.O. Box 621, Lake Worth, FL 33460

Amateurs in the Field:

In the world of paleontology, where amateurs and professionals are often at odds, another amateur find has made big news, this time in Argentinean Rio Limay Formations. Unlike the South Dakota fiasco with *Tyrannosaurus rex*, (See June *American Conchologist*, p. 21) this one's had a happy ending. Ruben Carolini, an auto mechanic who hunts dinosaur bones as a hobby discovered the skeleton of a beast that resembled *Tyrannosaurus rex* (though not related to *rex*, a North American species); Now replacing that species as the largest known meat-eating dinosaur, it lived 100 million years ago (30 million before *T. rex*), was over 40 feet long, and weighed 6-8 tons (slightly larger and several tons heavier than *rex*). It has been named *Gigantosaurus carolinii* in honor of its discoverer.

Animal Rights: A Fish Story

If the latter half of the 20th century has seemed to you to be one long erosion of rights and freedoms, you'll enjoy hearing about one of the latest targets of the animal rights movement. They want to ban fishing. Not just commercial fishing, but fly casting for trout and salmon, and pole fishing for catfish in the bayou, and even breadballs on a hook to pull out bluegills from the river. They say it is cruel to the fish, and they are taking all sorts of measures to discourage fishing, from scaring the fish at local fishing meccas to dressing up

like lobsters and picketing restaurants. (Will they want to ban cats and grizzly bears who snatch and eat the fish live with fang and claw?)

Cruel or not, it seems they go too far when they mess with man's favorite pastime. 54 million Americans fish, including legislators. And they are angry; they don't like this attack on their hobby one bit. Even some members of the animal welfare groups admit that it is silly and "somewhat counterproductive." Quip's one fisherman, "Anybody tells me I can't fish, I consider making them the bait." Perhaps we shell collectors should try interesting congressmen in shell collecting as a means of protecting the hobby. (from an article in the *Wall Street Journal* 10/10/95)

The Kawaihae Small-Boat Harbor project at the northern end of the Big Island in Hawaii involves an extension of breakwaters and destruction of living coral colonies. Kawaihae hosts one of the largest coral reef colonies in our island area. In an attempt to save the coral the state's Aquatic Resources Division here transplanted the coral heads to Pelekane Bay on the south side of the harbor. This is a three-year long experiment conducted by Paul Jokien and Feney Cox of the University of Hawaii Institute of marine Biology. Smaller experiments have taken place in the Florida Keys and in Kaneohe Bay on Oahu. A typhoon wiped out a larger experiment in the Republic of Palau.

The Hawaii Department of Land and Natural Resources has granted approval for 277 new day-use moorings to be installed at sites around our state in order to protect coral reefs from anchor damage. Currently 46 sites have been installed since 1988 as protection to the reefs from recreational and commercial boaters who anchor where diving and snorkeling are popular. But the new authorization is only a bureaucratic win, because no funding is yet available.

—from *Makai*, newsletter of the
University of Hawaii Sea Grant program

Chomp Down On This, Teredos

Would you believe recycled docks? They're already making recycled plastic dock railings at Aloha Plastic of Pacific Marine and Supply, Honolulu, and they're in use at the boat launch ramp at Honokohau Harbor. Wood docks rot; chemically treated ones leach chemicals into the water, and the sawdust from their construction must be shipped to the mainland as hazardous waste. Hopefully this project will create jobs, and keep plastic out of the landfills and chemicals out of the ocean. Better living through creative thinking.

A young Australian collector would like to exchange shells or correspond with another shell collector, 15-20 years old. Favorite families are Cypraeidae and Strombidae. Write Lynton Stephens, 1 Sally Court, Traralgon, Australia 3840.

BUYING AND SELLING NORTH AMERICAN FRESHWATER MUSSELS

by G. Thomas Watters

The following is from the *Info-Mussel Newsletter* of the Texas Parks and Wildlife Department, Heart of the Hills Research Station [emphasis mine]:

...a survey of mail-order seashell dealers was initiated to determine if unionids were also sold through these outlets as well. Price lists were requested from 13 dealers and nine ultimately responded. Among these nine price lists, three sold unionids and of those three, two included species which are federally listed as endangered. It should be noted however that there is no indication of major harvest and trade in endangered, native unionids. Rather, the dealers likely purchased shell collections from other collectors (often at their retirement or from their estates) which contained now-endangered species. One actually noted collection dates (long before federal listing). This may theoretically stretch the law a bit, but *ecologically is insignificant*. In the big picture, there are clearly individuals interested in unionids beyond the obvious harvest for commercial shell and pearls that *need to be considered when regulations are drafted*."

We applaud this state agency for its insight and common sense. If only every federal or state agency could deal rationally with this issue! That aside, selling and buying freshwater mussels for collections is, sadly, something that should be abandoned, at least temporarily. The reasons for this are complex. Agencies have become extremely sensitive to the decline of freshwater mussels. Laws that would never have been enforced 20 years ago are now carried out with a vengeance. Karen Couch's unfortunate experience in Kansas was not unexpected. I have discussed this problem with a colleague at the US Fish and Wildlife Service who is an endangered species specialist. The following are some of the problems with buying and selling mussels.

1) Endangered species are contraband. As with buying stolen property, you are guilty even if you, in good faith, believed the property not to be stolen when you purchased it.

Ultimately, only the collector knows when and where a specimen was collected. The dealer assumes he is telling the truth. The buyer assumes he is telling the truth. But if that specimen actually was taken after it became listed as endangered, the dealer has purchased and sold contraband, and the collector has received contraband. There are several types of laws that are broken, such as the Lacey Act, all carrying hefty fines and/or imprisonment.

Even if the specimen is from a historic collection, taken long before its listing as endangered, you need proof that this is the case: documentation, witnesses, permits, etc. You, the dealer, and you, the collector, need this. Without it, you are asking for a world of trouble.

2) State listed species are also contraband. These lists are much different from federal lists. They have different species, were enacted at different times, and change continually. And, most importantly, each state's list is unique. Many dealers seem to ignore the possibility that what is a common species in West Virginia, for example, may be endangered, and illegal to possess, in Ohio. I sincerely doubt that dealers have a copy of every state's list.

3) Commercial collecting of even the most common species is illegal in some states. Selling even a single specimen from these states is considered commercial collecting, and it is illegal.

4) The Convention on the International Trade of Endangered Species (CITES) lists many species that it is illegal to ship into or out of in the United States. Despite its name, it included many non-endangered species. It also changes periodically. What may be legal one day, may throw you in jail the next.

The depressing message is this: Until the furor dies down, it is not worth the trouble, aggravation, and hassle to sell or buy North American freshwater mussels. But it is better to have laws that protect these animals, however zealous they may get, than to have none at all, and watch our native mussels quickly slide toward extinction.

Aquatic Ecology Lab, The Ohio State University, 1314 Kinnear Road, Columbus, OH 43212



Lambis crocata (Link, 1807)

This shell displays a most unusual distortion, both as shown, and on the dorsal side, which cannot be seen in this photograph. And to top it all, it has developed two extra fingers.

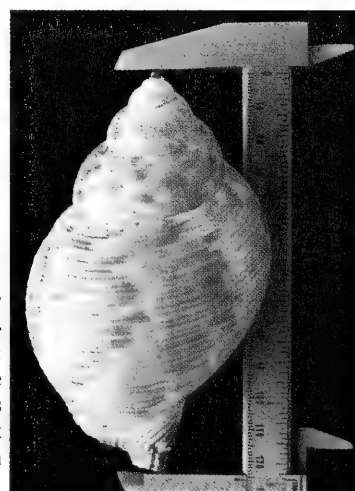
Cypraea algoensis Gray, 1825

The best developed marginal pattern I have seen so far in this species. The left margin reaches the mid-dorsal area.



Eudolium pyriforme
Sowerby, 1914

Unbelievable size: 125.9mm! The average size for this species is 60 to 70mm. This is not a wood carving from the Philippines!



(Photos by Werner Massier)



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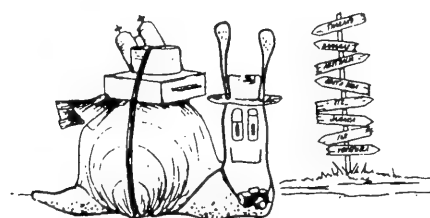
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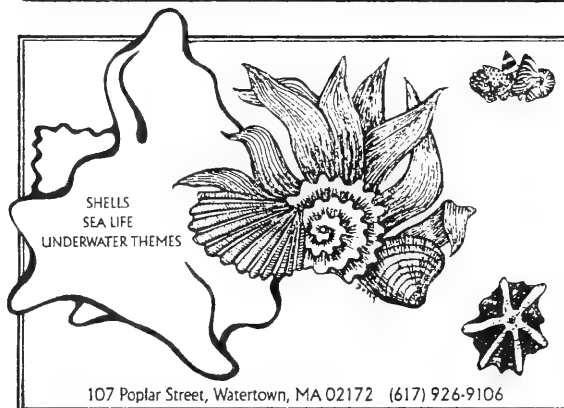
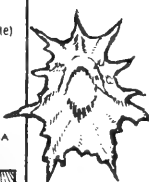


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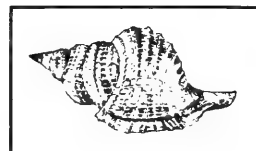
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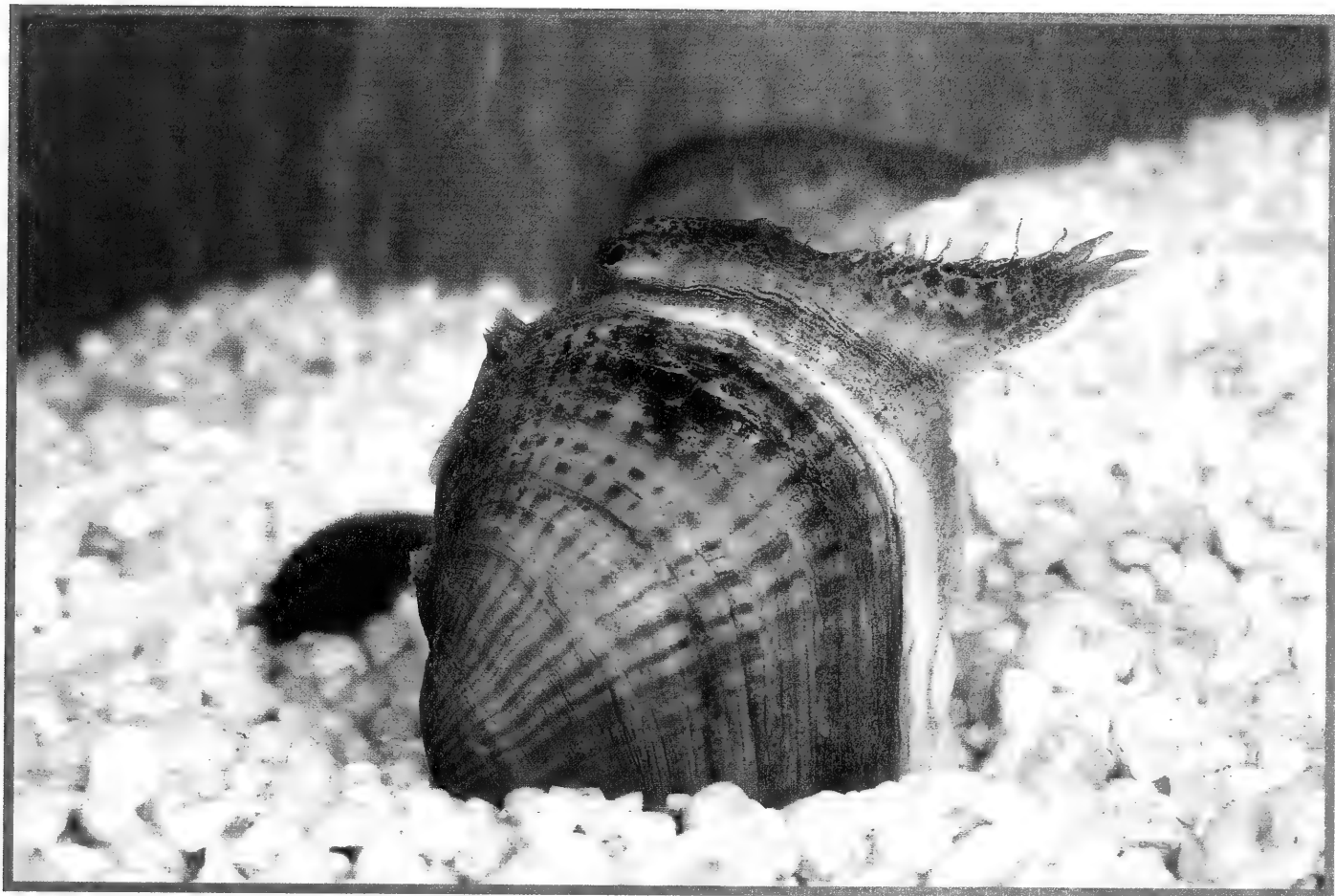
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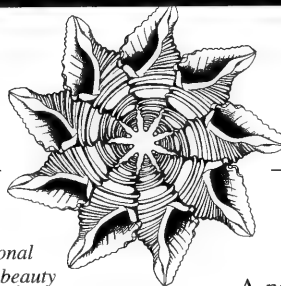
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AMERICAN CONCHOLOGIST

QUARTERLY JOURNAL OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 24, NO. 1

MARCH 1996



VOL. 24, NO. 1, MARCH 1996

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell enthusiasts — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced conchologists, scientists and shellers from around the country and the world.

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COVER: G. Thomas Watters is not just another river-mussel expert...he's also a fine photographer with an eye for a good picture. Those beautiful miniatures on the cover of Volume 22, No. 4 are his work. Gracing the cover of this issue is his portrait of the freshwater mussel, *Lampsilis fasciola* Rafinesque, 1820, displaying its "fishing lure." The lure is a very specialized portion of the mantle that mimics a small fish. It has eyespots and fins, and makes a swimming motion several times a minute. Supposedly it attracts predaceous fishes that act as hosts for the parasitic glochidial larvae of the mussel. When the fish attacks, it receives a faceful of glochidia that attach on its gills. The hosts are species of bass. This specimen is from French Creek, Pennsylvania.

NOTICE:

Increased costs of printing, paper and postage have necessitated an increase in the price for back issues. Also, there will now be an added postal charge per magazine for all back issues mailed outside the United States. The new rates will be posted on the back issues order form.

PRESIDENT'S MESSAGE

A new year brings new things. At the COA Midyear Board Meeting, the Board decided to present you with a new membership rate structure. You can read more about this in the article dedicated to that topic.

Another topic receiving much attention lately is the Internet and the World Wide Web. You will also read in this issue that COA has an "unofficial" site. Not wanting to be left completely behind, I decided that it was time that I too started to "surf" the Net. So far, I have only dipped my toes into it. By convention time I hope to be a full-fledged surfer. Is that what the TV commercial means when it says to "Catch the wave!"? Or is that something they do at football games? Since I now have an email address, you can reach me at lkoestel@magicnet.net. I do not believe that I will like writing letters any better via email than I do using US mail. So if you should happen to email me, please be patient. In the last issue of the *American Conchologist*, we suggested you send your email address to Debbie Wills. I would like to reinforce that request. I will have a list available around convention time for all those who want it.

Carole Marshall of Lake Worth, Florida has agreed to take over the Governmental Regulations and Legislative Monitoring Committee of COA. She is very active in this matter in the State of Florida. Anyone wishing to contact her can do so at 932 Cochran Drive, Lake Worth, FL 33461-5711.

It's not too early to make your reservations for the St. Pete Beach Convention this July. Hope to see you there!

LINDA

WALTER SAGE SCHOLARSHIP FUND

Gifts to COA in Walter Sage's memory are placed in COA's newly created fund to benefit malacological study. The intent is to make this fund an endowed one so that grants may be awarded annually from your contributions. The family of Walter Sage has contributed Walter's shell fabric collection to COA for sale in coming years to benefit this cause. Given sufficient growth, it will be possible to award the first Walter Sage Scholarship in July 1996. Help the fund grow by sending your contribution today. And watch it grow by consulting this tally box in coming issues.

The Walter Sage Fund is currently administered by the Academy of Natural Sciences, through the kind offices of Grants Chairman Gary Rosenberg. Make your check in Walter's memory payable to the Academy of Natural Sciences, Philadelphia and send it, along with an explanatory letter, to "The Walter Sage Fund," c/o Dr. Gary Rosenberg, Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103-1195. Your gift is fully tax-deductible.

The current amount in the Walter Sage Fund is:
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FRUSTRATIONS AND EXTENSIONS: Problematic and Ignored Species and Redefinition of Two Geographical Boundaries Part II

by Emilio García

photos by Richard Goldberg

On *Dolicholaturus celinamarumai* Kosuge, 1981 (Figures A - E) I obtained my specimen of *D. celinamarumai* some three years ago from a fisherman in Balicasag Island, Philippines, and recognized it as distinct from *D. lancea*, its closest relative. Not having a subscription to the *Bulletin of the Institute of Malacology, Tokyo* where Kosuge describes the species, I held it unnamed in my collection until recently, when Dr. Gary Rosenberg came to visit, took the specimen with him to the Academy of Natural Sciences at Philadelphia and made the identification.

The two most conspicuous differences between *lancea* and *celinamarumai* are the latter's yellowish tint and more swollen appearance. Also, the general sculpture of *celinamarumai* has a more beaded appearance. I have specimens of *D. lancea* from a number of localities, from the Philippines to Australia, and they are always readily identifiable as that species. This form conforms to the original German description by Martini and Chemnitz.

In the Solomon Islands occurs an interesting *Dolicholaturus* species which at first I thought to be a dark form of *D. lancea*. However, after comparing the specimen in my collection with two other Solomon Islands specimens sent to me by Mr. Gene Everson, I find enough consistent differences in color and sculpture to suspect that perhaps we may be dealing with species different from *lancea*. Mrs. Sally Kaicher figures this form in card number 1762. Although Gmelin's figure of *lancea* resembles at first glance the Solomon Islands form, his description in Latin of the species as a white shell with darker (violet) intervarical areas matches that of Martini and Chemnitz.

In the September 1994 issue of *American Conchologist* (p. 21), Gene has pictured *D. lancea* (as *D. "celinamarumai"*) and a *Dolicholaturus* sp. from the Solomons (as *D. "lancea"*). Gene, Lynn Scheu and I have discussed the three species in question and agree on the assignments.

On *Poirieria (Pazinotus) bowdenensis* Vokes, 1970 (Figure F) Last year a group from the Louisiana Malacological Society had the opportunity to go deep-water dredging off the Alabama coast. After the larger species were divided as equitably as possible, each of us took some grunge home for further inspection. A month later, while I was identifying the material that Harriet Cole, one of our expeditionaires, had found in her grunge, I ran across this wonderful little murex which, at first glance, I thought was *Poirieria (Pazinotus) stimpsonii* (Dall, 1899), a species I had only seen in books. After closer inspection I realized it was not. But what was it? There were not a lot of choices. Of course I went to where everyone who is dealing with western Atlantic muricids goes, i.e., Dr. Emily Vokes' superb articles on the Muricidae that have appeared (and are still appearing) in the *Tulane Studies in Geology and Paleontology*.

Well, I did find a species, *Poirieria (Pazinotus) bowdenensis*, that resembled the specimen in question but it was described from a single fossil specimen found in the Dominican Republic! I finally gave up and called Emily.

All I had to say was "hooked spines" and she said "Oh, it's *bowdenensis*." Dr. Vokes explained that in a later issue of the *Tulane Studies* she had readdressed the species and pointed out that, since its original description, specimens of recent origin had been collected by James Moore in the Gulf of Mexico. (Of course, this "later issue" was the only one I was lacking!) I think it important that this Gulf of Mexico muricid be made available to those readers who cannot afford to subscribe to all the important malacological journals.

On *Vexillum (Costellaria) sykesi* (Melvill, 1925) (Figure G) One day Ryan Taylor, a marine biology student and a shell collector, brought me a specimen he had collected alive while SCUBA diving in 70 feet of water at Stetson Bank, 70 miles south of Galveston, Texas. I was thrilled when I realized it was Melvill's species. The specimen conforms to the form described by McGinty in 1955 as "*Mitra moisei*," a junior synonym of *sykesi*, whose type locality is off Palm Beach, east Florida in 25 fathoms. Finding the species in the northwestern Gulf of Mexico was certainly a surprise.

On *Daphnellopsis fimbriata* (Hinds, 1843) (Figure H) No, it is not a turrid, as the generic name may imply. It seems to belong to the catch-all Ergalataxinae, one of the least understood of the subfamilies in the Muricidae*. I had no idea as to the familial placement of the specimen when I first obtained it from a fisherman who had just come back to Mactan from Balut Is., Philippines. I took an "educated guess" and placed it in the Buccinidae because it looked somewhat

(Continued on page 4)

*See December 1995 issue of *American Conchologist*, p.5.

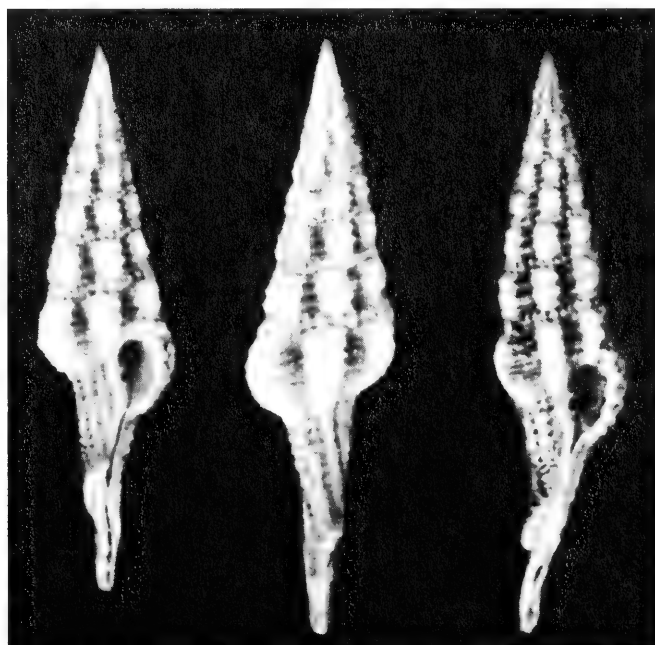


Figure A. Left and center: holotype of *Dolicholaturus celinamarumai* 28.6mm; right: 28.8mm. Bohol Id., Philippines.

FRUSTRATIONS AND EXTENSIONS *(Continued from page 3)*

like a *Bailya*. However, when I decided to take a second, "more educated guess," I decided it looked more like a *Maculotrion*, so I showed it to Emily Vokes the next time she came to visit: I brought the microscope and the specimen into the living room, went to the kitchen to fix some drinks, and then I heard, Oh, it's a *Daphnellopsis*!" Of course, as often happens to a generalist like me, I didn't even know of the existence of that genus so I said, "Does that mean it's a muricid?" And she said, "Yes!" Of course, all this happened before the last issue of *American Conchologist* came out, wherein a species of the genus *Daphnellopsis* is mentioned and pictured by Roland Houart, and then again by G. T(homas) W(aters) in his review.

As Houart explains in his paper, the type species for the genus, *D. lamellosa* Schepman, 1913, was originally included in the Pleurotomidae (i.e., Turridae), probably because of the *Daphnella*-like shape of the species and its large anal canal, much like the sinus of some turrid genera. Hinds' "*Clavatula*" *fimbriata* was placed in that genus, and for a while was thought to be a secondary synonym of *lamellosa*. When Houart examined the syntypes of *D. lamellosa* and studied the radula of *D. fimbriata*, he concluded (1986) that the two were not conspecific and that the genus belonged in the Ergalataxinae.

Daphnellopsis fimbriata has the general shape and size of *Maculotrion seriale*, with delicate axial fimbriations along its whorls and a large, wide anal canal. According to Houart, it differs from *D. lamellosa* by being "broader with shorter, more globose teleoconch whorls, lower and more numerous spiral cords, and a broader siphonal canal."

Those of you who have some of the wonderful micromolluscs from the Philippines identified as "*Unknown species*," as mine was, may want to look them over. Perhaps you are fortunate enough to have this beautiful species among them.

I thank Dr. Gary Rosenberg for his help with the identification of *Dolicholatirus celinamarumai*, and Dr. Emily Vokes for her help with the identification of *Poirieria bowdenensis* and *Daphnellopsis fimbriata*. We should all be thankful to those professional malacologists who take time to help us. I also would like to thank Mr. Gene Everson for sending specimens of *Dolicholatirus* for comparison and drawing attention to Sally Kaicher's card, and Mr. Richard Goldberg for taking the kind of pictures I shall never be able to take. Last but not least, our own editor, Lynn Scheu, became involved in the discussion of the *Dolicholatirus* spp., and forced me to take a closer look at this complex. As we say down here in southwest Louisiana, "Talk about cooperation!" And that is as it should be.

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Figure B. The Martins-Chemnitz figure on which Gmelin's *Murex lancea* is based.
Photo by Gary Rosenberg

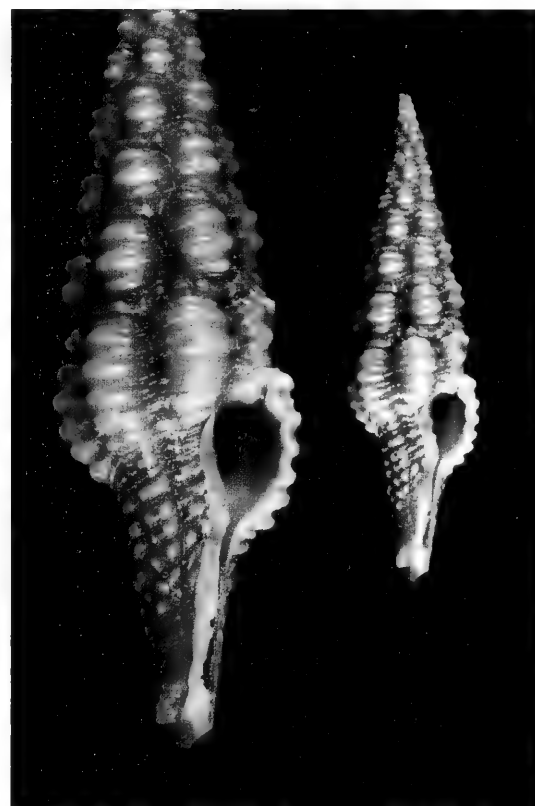


Figure C. *Dolicholatirus celinamarumai* from the collection of the author. 21mm.

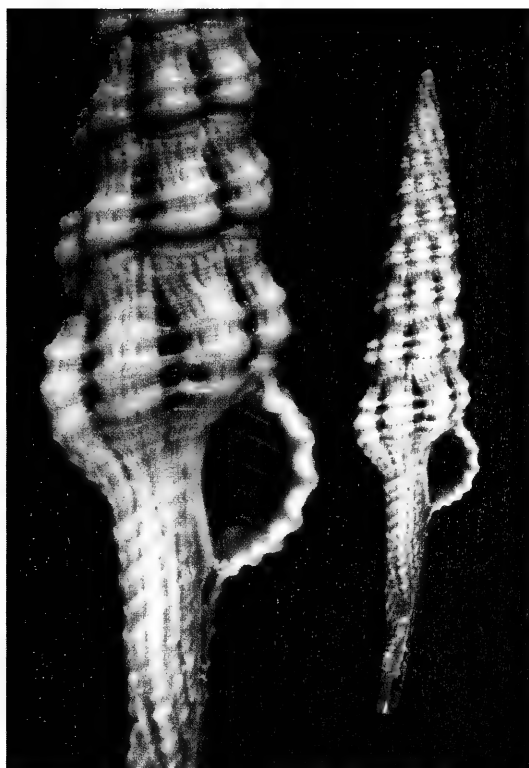


Figure D. *Dolicholatirus* "lancea" from the collection of Gene Everson. Malaita, Solomon Islands. 26mm.

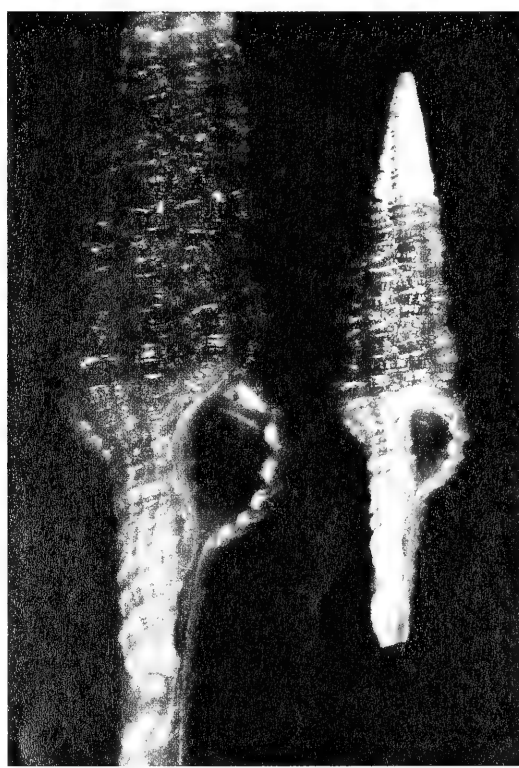


Figure E. *Dolicholatirus lancea* from the collection of Gene Everson. Apo Reef, Mindoro Strait, Philippines. 38mm. This form occurs from the Philippine Islands to Australia.

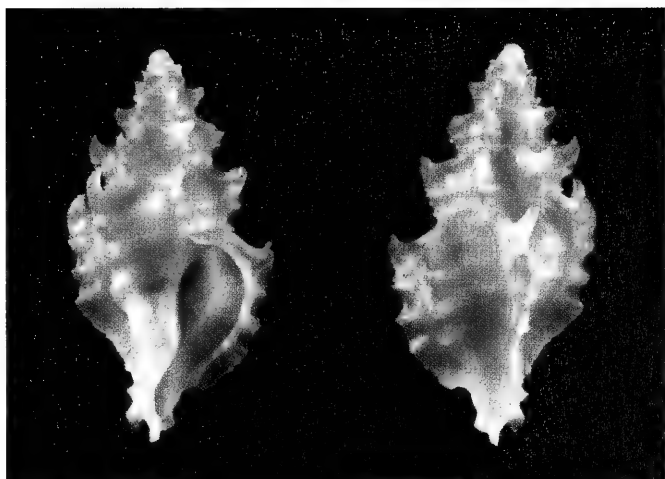


Figure F. *Poirieria bowdenensis* (9mm) dredged off Alabama in 100 meters.

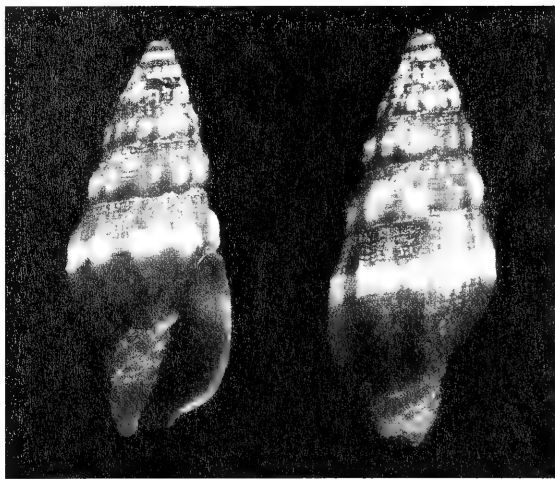


Figure G. *Vexillum* (*Costellaria*) *sykesi* 12mm, off Galveston, Texas. Dark brown with white peripheral band.

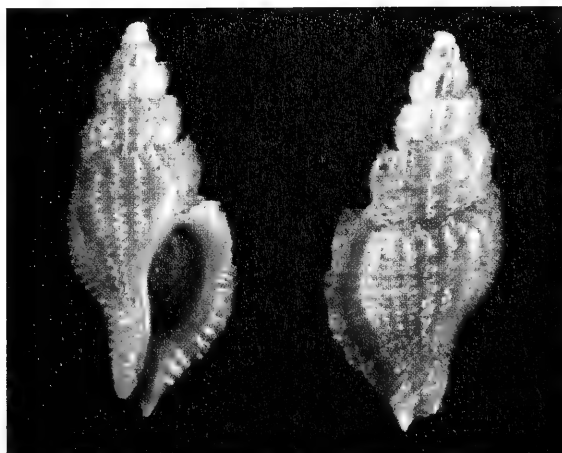


Figure H. *Daphnellopsis fimbriata* from Balut Island, Philippines. 10.5mm.

WALTER E. SAGE, III — A BIBLIOGRAPHICAL BIOGRAPHY

by Lynn Scheu

Always generous with his time and knowledge, Walter Sage contributed hundreds of articles to numerous shell club publications and scientific journals. *The Original Tide-ings*, *Thatcheria*, *The Whelk Wavelength*, *Central Florida Shell News*, the *Boston Malacological Club Newsletter*, *Of Sea and Shore* and the French *Xenophora* have all carried articles under the Walter Sage by-line, as have *Malacological Review*, *The Nautilus*, even the short-lived *Shells and Sea Life*. Walter served as editor of *The Littorina* (Louisville Conchological Society), *Irradians* (Long Island Shell Club) and *New York Shell Club Notes*; these publications received the lion's share of his authorial largesse. Bibliographic articles and book reviews make up the largest category of the 343 entries in his complete (malacological) bibliography. During his life he reviewed an astonishing 205 books on mollusks, and produced a number of shorter publication notes as well. He also wrote graceful, sensitive obituaries for such luminaries as William Clench and Veronica Parker Johns (*New York Shell Club Notes*). Eleven scientific papers and a host of miscellaneous articles on shells, shell collecting, and malacological/conchological events round out the amazing volume of published articles that he produced.

His writing career began in 1973 when, in his early 20's, he first contributed to *The Original Tide-ings*, a publication of Indiana's First Shell Club under the editorship of Arlene J. Hedges. For this publication he authored, at 23, his first piece on shells, "Cone Shells of Southeast Asia"; he discussed cone collecting in that region with specific reference to his own collection, especially shells he obtained from the Singapore shell dealer, Victor Wee. It was followed, in 1975, by a six part overview of the family Strombidae, a group which monopolized his collecting interest at the time.

In 1976, his home shell club, The Louisville (Kentucky) Conchological Society, began *The Littorina*, a bimonthly for which he authored articles, book reviews and various regular features until 1984. He co-edited this publication from 1978 and edited it from 1981 until mid-1983.

In 1978 he began a long association with the *Hawaiian Shell News* with an article on the Louisville Conchological Society, also published later that year in Tom Rice's *Of Sea and Shore Magazine*. In 1982 he launched the long-running column, "News of New Species." Forty-one columns running

from 1982 through 1987 kept readers apprised of interesting new taxa. His "Contemporary Conchology" feature accomplished the same purpose in the *American Conchologist* and ran to 11 more columns, 1988 to 1991.

In 1981, Walter contributed to the French publication, *Xenophora*, "A propos des Conidae," his first approach to Conidae nomenclature, an interest which he pursued in a series of articles listing new cone taxa, until just before his death. The last article published during his lifetime was the 1995 update for *American Conchologist* of his "Recently introduced names in the family Conidae" (June, 1995).

In 1981, Walter published his first attempt at a work of scientific significance, a bibliography on the mollusca of his native state. The occasion was AMU 1980, hosted, at Walter's instigation, in Louisville. He presented his compilation, "Pertinent References to the Mollusca of Kentucky," and published it privately the following year (100 copies). In 1982 he issued a 1 page addition to this work. In 1984 and 1985 further evidence of Walter's bibliographical knack appeared: two articles entitled "Malacological articles in some current biological and paleontological serial publications." (*Malacological Review*).

When he departed Louisville for his new position at the American Museum of Natural History, Walter entered scientific publishing in earnest; there, in conjunction with Dr. William K. Emerson (senior author), he produced some eight papers for *The Nautilus*. A final work, with Christopher Boyko for the *American Museum Novitates*, was published posthumously. It deals with a subject of great interest to Walter during the later years of his life, sleuthing out the lost type specimens stored in the vast collections of the American Museum.

The following bibliography of Walter's works is an abbreviated one, focussing mainly on his scientific papers (dates in boldface) and popular articles on shells. Produced by Christopher Boyko of Rhode Island, a former colleague of Walter's at the American Museum, it is preceded by Chris' own warm farewell to his friend, Walter Sage. Chris has compiled a complete bibliography as well, and any reader who would like to receive a copy should send a self-addressed stamped envelope to **The Editor, 1222 Holsworth Lane, Louisville, KY 40222-6616.**

WALTER E. SAGE, III — A BIBLIOGRAPHY

Compiled by Christopher Boyko

Walter Sage (1949-1995) was a man of many talents. He was a colleague, a collector, editor, contributor, trained political scientist, shell show judge, long distance driver, conchologist (to be sure), a one-man wealth of knowledge, and yes, to many he will always be "the guy with all the shell shirts." But above all these, to almost everyone who knew him, he was a friend.

I knew Walter for the past several years both as a fellow scientific assistant at the American Museum of Natural History and, after I left there, as a co-author and friend. This past May, although in great discomfort from cancer (but fortunately little pain), Walter put his all into our field work in Georgia, collecting mollusks and other invertebrates for a faunal survey. He didn't have the strength to put in more than half days, but for those hours each day he was in top

collecting form. His help was instrumental in obtaining specimens that would have been overlooked by the other members of our team and he loved being out there in the field. Walter was unbowed by his illness and still working hard.

Perhaps above all his other talents, Walter was a prodigious writer. I've assembled a complete bibliography of all his published works, including those he co-authored, from 1973-1995. Such prolific writing could only have been achieved by someone with a deep love of conchology and science. An abbreviated version of that bibliography follows.

This commitment to his work was felt by anyone who ever sat and talked with him on the phone (he practically lived on the phone), at a convention, or even through the mail. His passing, and the loss of his boisterous enthusiasm, leaves a void in the lives of all who knew him.

There is really no way that Walter's life and achievements can be condensed into a short space such as this, nor can anyone express his feelings about this man in just a few words. So this will have to do. In summary, while he will be missed by all and it is true that he died all too young, let it be remembered that his work and his hobby were one and the same. Could anyone ask for more out of life?

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NATURAL HISTORY OF *PHYSA*, A SINISTRAL FRESH-WATER SNAIL

by Robert Robertson

One early September afternoon, I was crawling along on my hands and knees in search of fresh-water snails in Pompeston Creek, conveniently close to the end of my back yard in Moorestown, New Jersey. At most there was but an inch or two of gently flowing water. In places, the gravelly stream bed was overlain by sand and mud. Snails were there aplenty: it took only a quarter of an hour for me to gather more than a hundred. Most had been crawling rapidly upstream. They were all dark greenish brown, about the color of the flocculent mud some of them had been crawling over and feeding on (see later). Algae grow on the spires (Fig. 2), and detritus collects there too. Most shells were one quarter to one third of an inch long (Fig. 1). Even some living animals had pieces missing. The smooth, shiny shells glinted in the late afternoon sun (Fig. 2).

As I transferred the snails from my collecting jar, I observed that all of them were left-handed (anatomically sinistral). Clearly, they were all one species. Most other snails are coiled dextrally, but when one holds a *Physa* shell with the spire up, the facing aperture, from which the animal extends, is on the left. I had collected the commonest fresh-water snail in the Philadelphia area: a species in the genus *Physa*. There is dispute among specialists as to the scientific species names in this group, so I shall not be more specific.

Normally, all species of *Physa* are sinistral, but only several very rare abnormal dextrals have been reported (I have seen only one: *Physa "integra"*: Green Bay, Iowa, Acad. Nat. Sci. Phila. no. 71968). There are old reports and Pip (1974).

Physa is classified in its own family Physidae, and this in turn is grouped among the basommatophoran ("eyes at the base") pulmonates ("lung bearers"). These all have eyes at the inner base of the tentacles. They all have lungs. A few of

Physa's distant relatives (e.g. *Siphonaria*) are fully marine, some with planktonic veligers showing that there never was an earlier stage on land.

Many millions of years ago, the basommatophorans perhaps gave rise to the stylommatophoran ("eyes on stalks") pulmonate land snails. These all have four tentacles on their heads, the tips of the hind pair bearing the paired eyes. All land pulmonates lack opercula. *Physa* has only one pair of tentacles and is by no means a land snail, although it lacks an operculum. Colorless spots on the mantle, seen in transparency through the shell, may (Figs. 2-3) or may not be present. It would seem that this is a genetic polymorphism ("many forms"). So much for externals. Internal anatomy, although no doubt fascinating to the right person, was not studied.

Physa is an extraordinarily hardy animal. They thrive in many badly polluted streams and ponds, and I was able to keep them with low mortality in various containers without their accustomed gravel and mud for more than three weeks. They seemed to do best in wide-mouthed dishes in about one half inch of stream water. Especially soon after they were collected and before an organic slime developed on the glass containers, the snails crawled around actively, some of them emerging so that they dried out and died. I provided one group of snails with pebbles from the stream. Few of these snails came out of the water. They preferred to stay on the slime-covered pebbles. Thus an original idea that lack of oxygen in the water had forced them to crawl out was wrong. The snails would also crawl upside down under the water surface film (Fig. 4). The physas would frequently crawl on top of the shell of another animal (which can be a prelude to mating). The one underneath would try, usually unsuccessfully, to throw off the interloper by twisting rapidly to and fro.

Observing the snails with a low-powered dissecting microscope, I soon began to see more. First came confirmation

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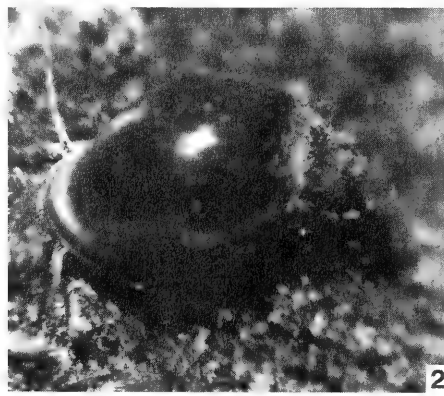
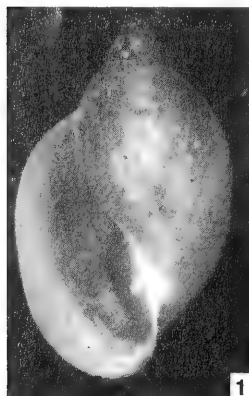


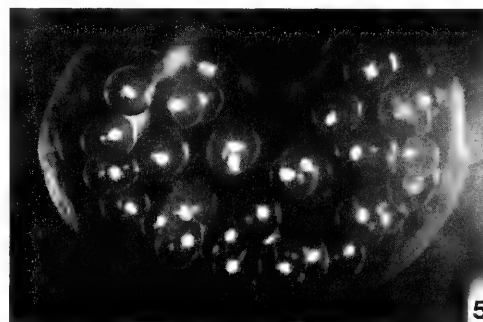
Figure 1. *Physa* sp. Shell. 9.3 mm long. The photographic negative was not accidentally reversed (this happens!). All Pompeston Creek unless otherwise noted.

Figure 2. *Physa* sp. Animal crawling on bed of stream. Basket Creek, near Delaware River, New York.

Figure 3. *Physa* sp. Dorsal view of animal crawling; note tentacles and front end of foot. Shell 8.7 mm long.

Figure 4. *Physa* sp. Ventral view of animal crawling under surface water film. Detritus is stuck in mucus at the middle of the foot.

Figure 5. *Physa* sp. Egg mass containing cocoons with single young embryos inside. Diameter: 5.5 mm.



that the animals are anatomically as well as conchologically sinistral (they don't have to go together!). I could see that the anus is in a mirror image position from that in dextral snails. Feces are extruded to the left of the foot, not the right.

There are three or four presumably sensory "fingers" on each side near the hind end of the mantle.

Next I saw a *Physa* taking in air to its lung through a small opening called the pneumostome ("lung hole"). This lies near the anus on the left rear side. *Physa* periodically comes up to the water surface to replenish its air like a whale. Then the snail submerges with the air in its lung. This causes the snail to be slightly but positively buoyant. Thus when a *Physa* is detached from a substrate it bobs to the surface. It may then turn upside down and crawl under the surface film as noted earlier. *Physa*'s gas-filled lung may act as a physical gill, helping to transport gases in and out of the snail's body.

Like most if not all pulmonate snails, *Physa* is simultaneously hermaphroditic, with male and female organs in each individual. Once I was lucky enough to see mating, which lasted for only a minute or so. One individual sitting on the shell of another, the one acting as male had its penis out from the left side behind the head and extended to the body of the "female" (it was difficult to see quite what was happening). Copulation can be reciprocal between hermaphrodites, and some can self-fertilize, but I observed neither of these things in *Physa*.

Two or three days later, the animals laid egg masses, attaching them to any solid surface including each other's shells. About one individual in five laid an egg mass. Each egg is contained in an ovate or elliptical cocoon which is in a thick, gelatinous mass shaped into a partial semicircle (Fig. 5). Each egg is pale brownish cream and extremely tiny. I measured ten of them with a calibrated eyepiece in a compound microscope. They were 109 to 125 microns in diameter, and there are 25,400 microns in one inch. Eggs and young embryos were similarly sized and colored. Numbers of eggs per mass ranged from 4 to 33, averaging 23 (counts from 10 masses). Embryologic development was rapid, and within four days tiny half millimeter-long babies could be seen inside the cocoons. At this stage they had sinistral shells and paired black eyes. They soon hatched and crawled to the water's edge. There is no free-swimming larval stage. (There are very few fresh-water genera with swimming veligers, and *Physa* is not among them.)

The early embryos of non-cephalopod mollusks consist of a few cells that keep dividing, doing so at an angle that causes a spiral. The second spiral cleavage in *Physa* is clockwise (looking down); in dextral gastropods it is counterclockwise. This spiral cleavage has no direct connection with shell coiling because in the third cleavage of *Physa* it is counterclockwise. In other words, the spiraling is opposite in dextrals and sinistrals, and alternates from generation to generation of cells. For further information on this somewhat complex topic, see Verdonk and van den Biggelaar (1983, especially p. 94). Apparently everything about *Physa* is reversed.

Shortly after they were first put in dishes, the adult snails released copious feces. As a result, the water became foul. Although this caused little if any mortality, I nevertheless changed the water. Thereafter, the snails produced much less feces because they had much less food. The normal food is algae, parts of grass leaves, and decaying vegetation. Feces examined through a compound microscope included fungi. The only algae in my culture dishes visible to the naked eye were growing on the shell spires mentioned previously. Perhaps I starved the animals to death.

Physa and its relatives are usually considered to be herbivores or detritus feeders. To my surprise, several times I

saw some of the snails eating the bodies of their dead or decaying brethren. I had been perplexed to find empty shells after too short a time for decay alone to have done the job.

Here's a way to clean shells for a collection! In a review of molluscan diets, Graham (1955) recorded the related *Lymnaea* as a feeder in part on carrion, but not *Physa*.

Like most snails, *Physa* feeds with the aid of a radula, a long ribbon bearing a multitude of tiny teeth. These are used to abrade the food and transport fragments into the mouth. Even in the absence of food, *Physa* will open its mouth and reveal its radula. This is best seen when the animal is upside down under the water surface, trying vainly to feed.

I was unable to make any observations on biological causes of mortality (other than possible starvation in the laboratory).

Various special problems confront any animal living in a stream. The Pompeston Creek turns into a raging torrent after each summer thunderstorm. Once in a while, the stream even overflows its banks. The torrent sweeps quantities of silt and trash downstream. The snails and almost everything else get swept downstream too. After such a mini-catastrophe there is no sign of *Physa* for a month or more. Their habit of crawling mainly upstream explains their ability to repopulate a stream. (Theoretically, there must be multitudes of *Physa* at the head of an undisturbed stream!) Another problem is drought. Some summers the Pompeston in its upper reaches ceases to flow, and only a few puddles exist here and there. Still another problem, this one particularly affecting mollusks with their limy shells, is acidity. Streams can become acid enough seriously to corrode the shells of living animals. *Physa* shells generally have pits etched by acid, and also scars on the shell where it has been repaired by the mantle (like the wavy line on Fig. 3).

The natural history information given above probably is as complete as for fewer than five hundred mollusk species, including those of economic and medical importance. A diligent observer with a dissecting and compound microscope and little else can usefully observe and record such information on some of the land, fresh-water, and marine species that we encounter commonly. Photography is a very useful adjunct, as are camera lucidas for the microscopes.

Much more is known about *Physa* (I have not done a literature search), but a very great deal more remains to be learned. There is considerably more to conchology and malacology than putting names on shells. There are many questions that are easy to ask and difficult to answer: What is a species of *Physa* anyway? What did *Physa* evolve from, when and where? Which living snails are most closely related? What is *Physa*'s internal anatomy, and how do its body organs function? Does the sinistrality affect this in any way? Why is this so preferred by *Physa*? What is the life cycle? How long does a *Physa* live? And how does it fit into an ecosystem? What kinds of parasites live in *Physa*? What other hosts do these parasites have, and do they transmit diseases? Is the hardy *Physa* a good test animal for ecological and pollution research? Finally, is *Physa* of use medically? And so on.

Happy snail watching!

NOTE: Most of this article was written when I felt the need for becoming familiar with a living sinistral gastropod. I was writing a semi-technical paper on the whole subject of snail handedness (Robertson, 1993), to which the interested reader is referred.

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FRANCKLY SPEAKING....

SHELL COLLECTING IN FRANCE:

by Franck Frydman

For a year now I have been reading articles and letters about "the criminalizing of shell collecting" and shell bans in the *American Conchologist*. I already knew about the anti-shell-collecting madness in Australia, but whether serious (Carl Cook's, Gary Rosenberg's...), satirical ("A.E. Carpy's") or controversial, (Lynn Scheu's), the articles made it perfectly clear that the danger of an absolute ban on shell collecting in the U.S. is real. Even though, as a militant of the P.U. (Politically Uncorrect) movement, I really loved the March 1995 editorial and Carpy's "Short History of Shell Collecting, 1990-2050," the latter two alarmed me, since my remote little France, already somewhat — in fact, far too much, — contaminated by the temper of political correctness imported from the U.S., could as well be infected by what you call "environmental correctness." As a matter of fact, France suffers from environmental correctness too.

In France (and Europe) the status of shell collecting and collectors is the same as in the U.S.: non-existent. The big difference between the U.S. and Europe is that, while Americans love to collect their native shells, very few continental collectors are interested in European shells. Most of us collect tropical shells which are far more attractive than our local species — we do not have nearby shelling areas like Florida and California where we can find colorful species. Even though France has many tropical overseas possessions (French Polynesia, New Caledonia, Reunion, French West Indies. . .) these are quite remote and difficult to explore. In France there are only four protected marine species and overseas the protected species are those listed by the CITES Treaty; thus, there are few restrictions to our shelling opportunities. The hows and whys of the real threats to mollusks in France and its overseas possessions are the same as in the United States and everywhere else. As a matter of fact it is only when some much sought-after volutes or *Zoila* are held back by the Australian Customs that somebody gives a sh... hell about collecting restrictions. Maybe we will suffer from similar regulations on U.S. collecting and find it difficult to get shells from Florida, California, and Hawaii. If the Philippine Islands were following the same trend,* we would see the end of shell collecting.

Shell collectors are the perfect scapegoats and targets when it's time to find culprits responsible for the disappearance of mollusks, but when we can barely make ourselves defend our cause. . . what is to become of us?!

The resolution made at the COA Convention was a start, at last, even if it was too moderate for me since it is content to enumerate commonplace facts to "endorse" responsible scientific collecting as being what everybody already knows it is! Is this a resolution? I am unable to find a single sign of any determination in this resolution. It fails to do what is essential: to declare war on environmental correctness and its troops, to publicize that the true threats to mollusks are habitat destruction by pollution and property development, and commercial fishing for food or curios, not amateur shell collecting whose impact is insignificant. Lobby! Our enemies lobby. Make yourselves heard and seen. . . our enemies use radio and T.V. Be resolute, show it, and fight!

I guess that your reaction to environmental correctness should have occurred far sooner, along with the one to political correctness, and that you should have seen the danger coming. I found it amazing to see the number of protected mollusk species in a recent issue of *National Geographic*, which gave lists of protected and endangered animal species. However can you, COA members, be responsible for the disappearance of so many species when you are so few? If you are that mighty, why aren't American farmers using you to get rid of molluscan pests instead of using those less and less efficient pesticides? You could call yourselves Slugbusters!

In Europe, we shell collectors do not really scour shores and rivers, and mostly depend on tropical countries to build up our collections. However, we have Eurocrats (the European Economic Community or E.E.C. white collars) who, like your own politicians, ignore who we are and what we do, and are excellently trained to deal with problems about which they have no knowledge. So our European "Greens" could quite easily put through a general ban on shell imports, even in countries where there is no shell collecting regulation. We simply couldn't lobby against that since European collectors are not numerous, not really united. There are only 5 tax-registered shell dealers in France, maybe 20 in the whole of Europe, and even with the support of malacologists, who know perfectly well that we do not endanger mollusks, we could not fight restrictive regulation.

In Europe, the COA resolution was published and commented upon only in a recent issue of *La Conchiglia*. Nowhere else has it been re-published, and it seems that almost nobody here watches what's going on in the U.S. or in Australia. I am not even sure that anyone in Europe is watching to see if something similar could happen here. . . . At the time our issue is to collect shells with our eyes wide open instead of ignoring what happens outside Europe. The danger, you know, could perfectly well reach us too, and lead us all to...extinction.

Former co-editor of the French Association of Conchology publication, *Xenophora*, Franck is dedicated reader of *American Conchologist*. He shares the opinion of your editor that shell collecting is a world experience with worldwide concerns. He has kindly consented to become a regular columnist in the pages of *American Conchologist*, to contribute his very continental viewpoints, opinions, and outlook to help broaden our view of shell collecting.

James Barnett writes: The Philippine government recently placed a number of marine products, including several mollusks, on an export ban list. The U.S. Customs Service will not pass the banned items, but will return them to the sender.

The forbidden items include all coral, and *Cassis cornuta*, *Charonia tritonis*, and *Turbo marmoratus*. All *Hippopus* species, and *Tridacna elongata*, *T. gigas*, *T. squamosa*, and *T. crocea* are on the list, as is meat from these clams. *Placuna placenta* is also on the list."

8421 Buffalo Avenue, #2, Niagara Falls, NY 14304

*They are! See James Barnett's letter column right:

3 Rue duPuis, 75003 Paris, France.

Mr. Barnett cites a September 31, 1995 notice from the Republic of the Philippines Bureau of Fisheries and Aquatic Resources for his information.

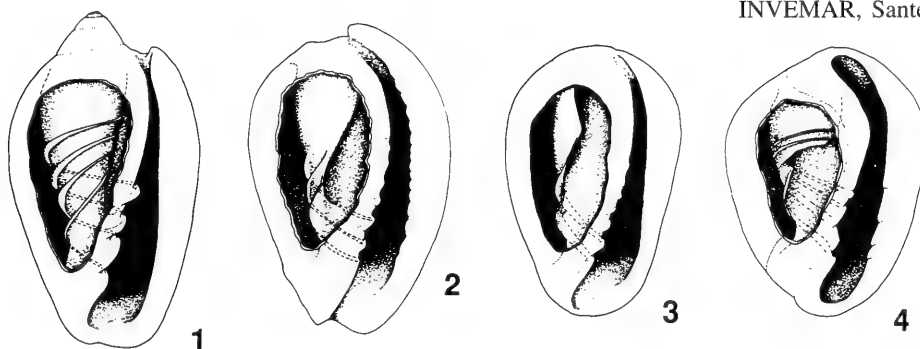
CONCHATENATIONS

by Gary Rosenberg

Marginella revision

Holly and Gary Covert published an excellent revision of the Marginellidae in the October issue of *The Nautilus*. Their work is based on shell and radular morphology and foregut anatomy. They split the Marginellidae in two, recognizing Cystiscidae as a full family. They regard Cystiscidae as more closely related to the Olividae than to the Marginellidae. Cystiscids differ from marginellids in having the internal whorls partly reabsorbed, and the columellar plications reduced internally (see illustration). They differ also in having narrower and more numerous central teeth on the radula, and in various other alimentary features. The living genera placed in Cystiscidae are *Canalispira*, *Crithe*, *Cystiscus*, *Extra*, *Gibberula*, *Granulina*, *Persicula*, *Plesiocystiscus* and *Pugnus*. If you still haven't recovered from the split of Mitridae into Mitridae and Costellariidae, you have two possible responses to the splitting of the Marginellidae. Bite the bullet and relabel your collection, or, smash your marginellas in frustration. After smashing the first few, check what the internal whorls look like, and maybe you'll repent. You can still use marginella as a common name, just like the miter aficionados do. [Covert, G.A. and H.K. Covert. 1995. Revision of the supraspecific classification of the marginelliform gastropods, *Nautilus* 109: 43-100.]

The Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103-1195



Figures 1-4 from the Covert & Covert revision of the Marginellidae. **Internal shell whorls.** 1. *Prunum prunum* (Gmelin, 1791), showing unmodified internal whorls. 2. *Persicula persicula* (Linné, 1758) showing cystiscid internal whorls. 3. *Plesiocystiscus jewettii* (Carpenter, 1857), showing cystiscid internal whorls. 4. *Granulina hadria* (Dall, 1889) showing modified cystiscid internal whorls.

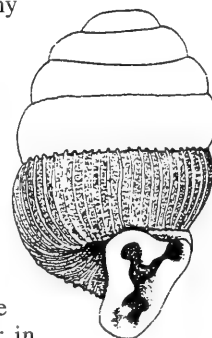
SHELLS OF BELGIUM

A. Delsaerd, editor of the Belgian Society for Conchology's fine publication, *Gloria Maris*, and L. Steppe have done a special issue of *Gloria Maris* on "Shells of the Belgian Coast." With 8 full color plates, and scientific and common name and description for each species, this 20-page publication is a real help in identifying shells from this region. No English edition is available, but Dutch or French versions may be ordered from the senior author, A. Delsaerd at Stationstraat 10, 3200 Aarschot, Belgium. Tel: 016/56.19.70. No price given.

If *Liguus* are your passion, this one's for you. **Lure of the Liguus: The Florida Tree Snails** by Henry Close has been published by Of Sea and Shore Publications. With three color plates and a color cover, 30 black and white plates, maps, tables, figures and more, it should prove a helpful guide for any lig aficionado. It's \$19.95, plus \$3.00 U.S. postage. Order from Of Sea and Shore at P.O. Box 219, Port Gamble, WA 98364-0219.

LAND SHELL LOVERS, TAKE NOTE:

South African D. W. Aiken spent many years on his systematic study of South Africa's terrestrial mollusks, but passed away before it could be completed. *The Strandloper*, Bulletin of the Conchological Society of Southern Africa, has recently published a shortened version of one chapter from the work of Don Aiken on the land shell genus *Gulella* Pfeiffer, 1856 (Streptaxidae) in its September 1995 number (243). Of these small-to-minute predator/scavengers active in leaf litter in northeast S. Africa, some 50 species are included in this abridged version. The Society has also published the full chapter on *Gulella* as *Special Publication No. 6*, at \$10.00 U.S. including postage. Both are available from the Society at 7 Jan Booysen Street, Annlin, Pretoria 1082, South Africa.



CATCHING THE INTERNET WAVE

by Deborah Wills

The Internet is a way of business and life for some, fast becoming an addiction for others. New information sites, access software, acronyms, and technical and non-technical terms for the Internet are appearing at an astounding rate. Even pre-existing words and phrases, such as "surfing," "cruising" the highway, "spam," "flame," and "shells" (a computer term) take on whole new meanings when applied to cyberspace. To add to this confusion, the Internet itself is often explained by how people use it — electronic mail (email), Web browsing, etc.

If I took some donax shells to a COA gathering and asked people what they were, I'd probably get several different answers based on who was doing the answering, what country he came from, and his level of interest in shells. That's one reason the scientific (Latin) name is used as a world-wide standard for identifying shells — it gives a common basis to work from. (Yes, I know cladistics may change this, but most of us still use the binomial classification and not cladograms.) Well, the Internet is a communications network that allows computers, worldwide, to "talk" to each other using a standard "language" (protocol). The Internet is just a highway. And just as a highway isn't the vehicle used to travel it or the towns it passes through along the way, so the Internet isn't the application on a computer one uses to travel the Internet, nor is it the information servers the vehicle passes through on the trip.

To bring some order to cyberspace, each information source connected to the Internet is given a unique address known as a Universal Resource Locator (URL). Just as a U.S. postal zipcode identifies a town and specific post office, the URL identifies the information domain (i.e., .net, .com, .edu, .org) and computer server(s). Information after a single slash (/), when used, tells which specific directory, subdirectory, and/or file is to be accessed. In "surfing" the Internet for interesting URLs, I have come across many sites which provide differing levels of information on mollusks. These range from electronic discussion groups (i.e., Mollusca) to online publications, to museums, libraries and educational institutions, to pictures, crafts and recipes.

So how do YOU catch this Internet wave and start surfing the (c)URLs? IT DEPENDS! There is no exact formula for configuring the perfect Internet or computer setup that will meet every user's needs. Regardless of what you hear to the contrary, what's BEST for you depends on **Who, What, When, Where, How** and **Why**. Take the time, up front, to answer these questions. To begin the process, check out the Internet sections in your local library or bookstore for some introductory books to read.

Who are you — your personality, your work style, your information needs — and **What** do you want to be able to do on the Internet? Do you want to read newsgroups, chat with a friend, send electronic messages to colleagues, exchange data files, download graphics, write your own "home page," or just find a good game to play? Determining your information needs will help determine your computer (hardware/software) and service provider needs.

Remember the bumper sticker that said, "You want it WHEN?" Be patient! You don't have to be a computer whiz to access the Internet, but it takes time to learn a new skill, even a simple one. Other than that, **When** you access it is up to you, your financial resources and your service provider. Find out when the less busy, or off-peak, hours are in your area. Access during those times will often be faster and consequently cost less.

From **Where** you access the Internet is not as straightforward as it once was. Most of us will connect from a stationary computer at home or work, but laptop/notebook computers and cellular (wireless) technology are making Internet access more mobile and available for field work. Just don't forget that access via cellular phones or regular 800 numbers may incur extra charges.

How you access the Internet involves both the technical "how to" and the practical "how much." Shop around for the going rate in your area for computers if you need one, and Internet services. Check with local computer clubs, ask friends and colleagues for recommendations, but remember that the final decision is yours, based on your needs and financial resources. If you don't have a computer, now is the time to make that investment. If your information needs will include large data files and/or lots of graphics, your computer should have a fairly fast processor (486DX-33 and up), a large storage capacity (840+ K hard drive), and a fast modem (14.4K minimum). From experience I know that a 2400 baud (speed) modem **will** work for **very** simple Internet activities such as email, and text Web pages, but it is much too slow for most graphics and newsgroup files. If purchasing an external modem, make sure the serial port on your computer will work at the fastest speed the modem is rated at. If it won't, you're wasting your money.

Choosing an Internet Service Provider (ISP) is one of the most important decisions you'll make. Some nationwide online services (i.e., Microsoft Network, CompuServe, America On-Line or AOL and Prodigy) have value-added online benefits (with or without hourly extra access fees), but offer only limited access to the Internet. These online services require the use of proprietary software (often provided with a limited free trial period), which makes getting online fairly easy. However, they may not offer high speed local access numbers; if they don't, this may make their services more expensive than a true local ISP due to telecommunications surcharges. You'll need to decide if the value-added online benefits are worth the extra expense.

Check with the Chamber of Commerce to see if there are any direct ISPs in your area. Find out who is using a service and ask for a demonstration. If choosing a local ISP, look for one that offers full Internet access including access to email, newsgroups, a wide range of information servers (i.e., WWW, Gopher, FTP), telnet and client-based software. Don't forget to investigate all the costs. Is there a flat monthly rate or a per hour charge? It is not unusual to spend several hours at the computer at one sitting. Are there extra phone charges due to 800 or long distance numbers? Is your telephone service unlimited or metered? Does the ISP transmit data at a range of speeds (4800 to 64K+) and is that speed fast enough for your needs? Can you connect when **you** want to without getting busy signals? Is the access software provided and are step-by-step instructions available to assist in setting up? Above all, make sure that good technical help is available when **you** need it. Last, get the facts from the service providers, but remember that they are trying to sell a service. Whether you choose a nationwide or local service, remember that you have the right to change services if not satisfied with the one you have.

Why? — Why not? By now you should know that the Internet is a powerful tool which can be used for good as well as evil. Why shouldn't we use it as a tool for good — to share information and ideas on conchology? With shrinking budgets at work and home, travel to meetings may not always be possible. With the threat of more shelling bans and restrictions, we need a

means to inform the public on the true causes for environmental concern. And the list goes on. The Internet is the information wave of the future, and yet the future is here now.

For those who have access to the Internet, and need a place to start exploring, I have compiled a list of Internet Resources for Conchologists (URL: <http://fly.hiwaay.net/~dwills/shellnet.html>). This list is an attempt to gather and organize the results of many hours of searching for mollusk-related information sources. Many of these sources have pointers (links) to other sites not on the list. If any shell club has a club page, or is aware of other good mollusk sites, let me know and I'll add them to this list. As you surf the net, begin your own "Hot List" or "Bookmark" of interesting sites. You may never find your way back to that source otherwise.

Hopefully these two articles have started you thinking about the possibilities of the Internet. In future articles we'll take a

closer look at specific Internet services and "a day in the life of a shell Netter" (or how to search the net). For now, take the plunge and have fun surfing for those awesome (c)URLs!! Or in the popular terms of my day, when surfing was a *real* exercise: "HANG TEN!!"

Late-breaking news of the Internet censorship bill takes a bit of the oomph out of this marvelous new communications medium. As things stand now, even messages involving molluscan reproductive studies may be rather closely scrutinized. We could wind up having to dress our snail graphics appropriately in skirts or trousers to avoid corrupting sensation-seeking youth. And what will be the censors' reaction to bivalves broadcasting their seed into the swimming pool, so to speak! Dare we even mention such body parts as verges or anal notches?

MORE ON THE INTERNET

by John Caldeira

Conchologists of America, Inc. now has an "unofficial" Internet World-Wide Web site with links to other web locations of possible interest to shell collectors. The COA web site includes a brief description of the organization's mission and interests, a listing of member clubs, upcoming shell shows and events, as well as information on membership and the *American Conchologist*. This site was created to provide information related to shells, mollusks, molluscan conservation, and the COA to persons using the Internet as an information source.

One strength of the Internet as an information source is the ability to "link" to other institutions' web sites. The COA web links include the Bailey-Matthews Shell Museum and several university malacological sites with information ranging from zebra mussels to escargot. It also has links to the Georgia, North Alabama, and North Texas Shell Clubs, describing club activities and membership information.

My favorite web link from the COA web site is a tide predictor program. This user-friendly site will print the times and magnitudes of high and low tides for hundreds of locations throughout the world. The web surfer inputs the location and dates of interest, and the program prints a table and even a graph of the predicted tides!

It is hoped that a COA web site will be a focal location on the Internet for stimulating an interest in conchology. This can be accomplished by providing a wealth of information of interest to shellers, both in the content of the COA site and in links to other web sites. A truly robust web site would also include an archive of key articles from the *American Conchologist* and a section on frequently asked questions.

Web surfers can find the COA site by searching with keywords such as "shells," "collecting," "mollusks," "seashell," "conchology" or "malacology." It can also be found by entering the location directly: <http://home.earthlink.net/~jcaldeira/coa.html>.

The author, John Caldeira, and also the creator of the "unofficial" COA website, is husband of COA member Judy Lewis. He's her "assistant shell collector" he says, and has been "dragged kicking and screaming on many tropical seaside vacations." With his software skills he has now found an outlet for his own interests within the world of COA. Many thanks for your efforts on behalf of shell lovers everywhere, John! Speaking of which, COA Membership Chairman Bobbie Houchin tells us that we've just gotten our first "Internet Member," someone who found John's COA site and mailed in an application to join.

BOARDTALK.....

From BOBBIE HOUCHIN, Membership Director: Members, COA truly appreciates your renewing for 1996. Now you will receive all four 1996 issues of the *American Conchologist* to keep you informed about the shell world, including in this issue the 1996 COA Convention, "Diamonds in the Sun," July 15-19, hosted by the St. Pete Shell Club at TradeWinds Resort, St. Pete Beach, FL. — Field trips! programs! new and old friends to meet! an honest-to-goodness beach! the auction to benefit grants as well as your collections! lots more! — You will have a fun and informative week.

Hate to repeat this, BUT especially for new members: to keep from missing an issue, please send any change of address to me, Bobbie Houchin, 2644 Kings Highway, Louisville, KY 40205-2649. *American Conchologist* is sent out via Bulk Mail, so if you move or are away for a while, your issue will **NOT** be forwarded or returned to sender. Send your new address as

soon as possible or arrange to have someone take care of your mail to avoid missing an issue. As you know, issues are published in early March, June, September and December.

To help to recruit new members, Rosalie Taylor, COA Public Relations Director, has offered to take over sending COA brochures to the various shell shows. New members are already joining, thanks to Rosalie.

A Second Request to pay 1996 dues is being sent to unpaid members, so ask your fellow COA member if he has paid his dues. Many, many have paid, which is just great! Some members are giving memberships as gifts, or are just helping others by sending in their dues, new and renewal! I value your help and cooperation. You are certainly keeping me busy and out of trouble. Well, we will have to see about that last part. Think SPRING! and then JULY will soon be here!

EDITORIAL

President Linda Koestel has formed a Special Committee, the Governmental Regulations and Legislation Monitoring Committee, chaired by Carole Marshall of Lake Worth, Florida, and Broward Shell Club. Its purpose is to monitor proposed legislation against shelling, educate our members about it and encourage them to write to our representatives about our views. That's wonderful, a step forward. It must be done. But Carole has been working for some time, on her own, not just monitoring, but acting to combat the growing movement toward shelling bans within the State of Florida, writing, reading, traveling, speaking, and buttonholing those in a position to influence the decision-making process. She has been a one-woman whirlwind. We hope that the force of COA behind her will help her in this crusade.

The latest hot spot is the Manatee County area. Carole sends her thanks to all those who wrote to the Florida Fish and Wildlife Commission, and to those who attended the final hearing on the proposed ban on shelling for Manatee County. She reports that they have averted a total ban and that a "2 specimens per species per day" bag limit is being proposed instead. Peggy Williams, June Bailey, Betty Lipe, Carolyn Petrikin and Carole Marshall, the COA members who attended

the hearing and spoke before Commission in defense of shell collectors, were told that if they had not appeared, the total ban would have been put into effect.

That's wonderful, that we can make a difference. But it's also pretty scary, isn't it? Just a short time ago we didn't even know Manatee County was threatened. Other beach areas along the west coast are contemplating bans similar to the one that was imposed upon Sanibel Island, so Carole needs all the support she can get. The people making these decisions do not know enough about the habitats, life cycles and needs of mollusks to make informed decisions. Those who request them seem to know even less. Impassioned pleas for saving the lives of the few mollusks shellers take are made by the same people who are calling for beach renourishment programs in their communities which will kill millions of shells. A massive education campaign needs to be mounted, and Carole cannot do this alone, or forever. Contact Carole. Ask what you can do to help. Don't just send her suggestions. We're all in this together! If she fails, it isn't only she who will be prohibited from going shelling. We'll all suffer, for generations to come. And the devastation wreaked by habitat destruction and pollution will continue. You can reach her at 932 Cochran Drive, Lake Worth, FL 33461-5711.

CONSERVATION VS. PRESERVATION

by Vincent Nichnadowicz

I have collected shells for almost thirty years and derived much enjoyment from the activity. However, I am also an environmentalist and try to practice my profession of landscape architecture as well as my personal life in such a manner as is consistent with my beliefs. Consequently, I am experiencing a large degree of ambivalence about my shell collecting.

Many of the points raised by Gary Rosenberg and Jim Brunner accurately describe my views on shell collecting. There are other points, though, that concerned readers may ponder in refining their views of shell collecting that I would like to share. Primarily, I feel it is very important to distinguish the difference between the concepts of "conservation" and "preservation."

Conservation is the managed use of a renewable resource. Shell collecting, like the hunting of animals, can be one of the tools used in this management. Governments provide laws to safeguard the resource (game or shells) to ensure its viability and provide fair and safe ways of harvest. Monies generated from licenses, etc., are used to pay the cost of the management as well as acquire and maintain land for the game to inhabit and for people, hunters as well as non-hunters, shell collectors as well as non-collectors, to use and enjoy.

Preservation is the setting aside of land or an ecosystem in order to keep it from any harm, damage, or evil. Preservation usually minimizes any active use of the site such as hunting or harvesting natural resources. Preservation can be a tool for protecting especially vulnerable lands or ecosystems such as those containing endangered species. Unfortunately, many lay "environmentalists" confuse preservation with conservation and thus see any use of a renewable natural resource — hunting and shell collecting — as evil. This is often a wrong conclusion.

As shell collectors we all need to **distinguish between areas that are conserved and areas that are preserved**. For example, to collect shells from the extremely ecologically sensitive and **preserved** Galapagos Islands is, in my opinion, reprehensible. However, to collect shells from Ecuador is

acceptable. Unfortunately, governments often issue blanket laws more geared to preservation than conservation, probably more to do with simplifying law enforcement than anything else. Having traveled to many parts of the world, I have seen the damage caused by tourism to coral reefs. When that damage becomes severe enough the government steps in to strictly curtail use. While most shell collectors are probably environmentally sensitive, they probably also damage (innocently, no doubt) to such ecosystems as coral reefs by turning over rocks, moving sand, and causing other small disruptions that, when magnified by many collectors, ruin reefs. Shell collectors are also not immune to the avarice that can affect any collector. How many collectors keep multiples of the same species, justifying their acquisitiveness with the rationalization of collecting (pseudo-)scientific locality information? (And even with the best of intentions, the efforts of many collectors are dispersed without any lasting contribution to science. If you doubt this, check the volume of still-packed donated shells most scientific institutions keep in their storerooms.)

What is the solution to the dilemma of whether to collect shells or not? I do not know the answer, but I think the answer might lie in seeking to **establish shell collecting as an active use of a natural resource like hunting**. To this end, shell collectors, "environmentalists," and governments need to adopt a conservation attitude rather than a preservation attitude toward shell collecting for most areas. Rare or endangered ecosystems still need to be preserved. Amateur collectors should not be collecting shells from preserved areas or buying fresh specimens from those areas. Governments should expand conservation efforts directed toward shell collecting, institution collecting licenses and limits on the number of shells collected and the seasons collected, based on sound scientific judgments. As shell collectors we have the responsibility to conserve shells as well as collect them, and even if that responsibility involves the added inconveniences of licenses and permits, it is still a responsibility we should all bear in this increasingly smaller world.

NAME CHANGE UPDATE: NO MORE THAIDINAE

by Gene Everson

In recent issues, I have criticized workers for creating classification systems resulting in name changes based on only limited anatomical features. This makes identification of dead-collected or fossil shells impossible. I don't believe in criticism upon criticism without offering a better way or a solution. Here's one:

Silvard P. Kool, Mollusk Department, Museum of Comparative Zoology, Harvard University, has published in *Malacologia*, 1993, V. 35, no. 2, pages 155-259, a generic-level revision and phylogenetic analysis of the muricid subfamily Rapaninae. Here is a work that finally encompasses the big picture. The animal was studied — primarily the gross anatomy of the female and male reproductive systems, alimentary system, mantle cavity organs, and the radula — as well as shell ultrastructure and opercular and protoconch morphology. If future taxonomic revisions are as comprehensive as this, I believe both anatomical advocates and shell feature advocates will be satisfied.

The title of this 104-page study is "Phylogenetic Analysis of the Rapaninae (Neogastropoda: Muricidae)." There is much detailed scientific data of little interest to us average collectors, (it was not written to entertain us), but I'd like to bring out some interesting points.

Because shell morphology is influenced by environmental selection pressures, the only shell characters used in cladistic analyses were those taken from larval shells and shell ultrastructure. The taxonomy and phylogeny of the Muricidae have been in a state of confusion for over two centuries. Due to the vague boundaries of higher muricid taxonomic groups, the limits of lower groups cannot be set, and vice versa. Familial and subfamilial arrangements of Muricidae differ greatly among authors. A selection of arrangements and authors is listed in Table 1. For example, Thiele (1929) included two families, Muricidae and Magilidae, and did not list subfamilies. Keen (1971) arranged muricids into Muricidae and five subfamilies, Thaididae and three subfamilies, Columbariidae, Coralliophilidae, Moreidae and Sarganidae. Cossman (1903), Wenz (1941), Radwin & D'Attilio (1971), Ponder (1973),

Ponder & Warén (1988), and others included in Table 1 all disagree in their arrangements.

Of all large littoral prosobranchs, none are more conspicuous and perplexing, in a taxonomic sense, than gastropods belonging to the Rapaninae Gray, 1853. This name predates Thaidinae Jousseaume, 1888 by 35 years. Several muricid generic, subfamily and family names are no longer in use, and the ICZN opinions which invalidated them are mentioned.

The current classification of muricid "rock shells" is:

Muricoidea Rafinesque, 1815

MURICIDAE Rafinesque, 1815

Subfamily **Rapaninae** Gray, 1853

Genus

Concholepas Lamarck, 1801

Cronia H. & A. Adams, 1853

Cymia Mörch, 1860

Dicathais Iredale, 1936

Drupa Röding, 1798

Mancinella Link, 1807

Morula Schumacher, 1817

Nassa Röding, 1798

Pinaxia H. & A. Adams, 1853

Plicopurpura Cossman, 1903

Purpura Bruguière, 1798

Rapana Schumacher, 1817

Stramonita Schumacher, 1817

Thais Röding, 1798

Subgenus

Neorapana Cooke, 1918

Tribulus Sowerby, 1839

Vasula Mörch, 1860

Vexilla Swainson, 1840

Subfamily **Ocenebrinae** Cossman, 1903

Genus

Acanthina Fischer von Waldheim, 1807

Ecphora Conrad, 1843

Forreria Jousseaume, 1880

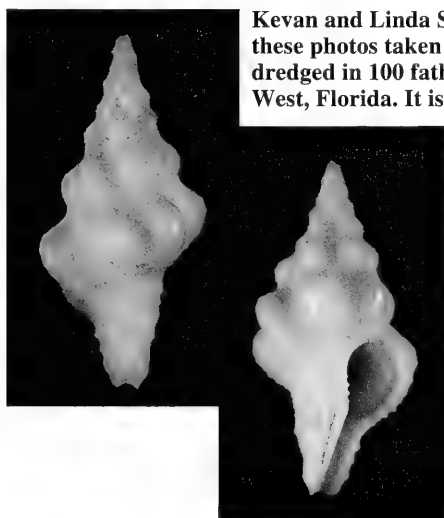
Haustrum Perry, 1811

Nucella Röding, 1798

Trochia Swainson, 1840

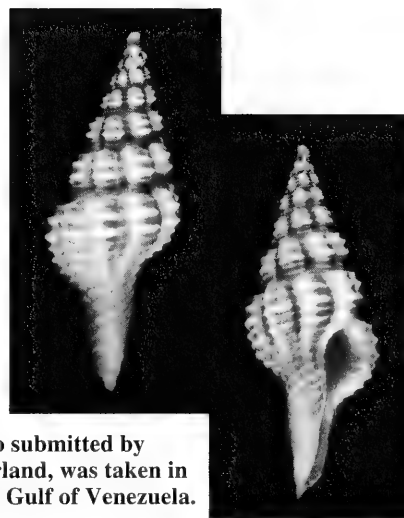
500 Nottingham Parkway, Louisville, KY 40222-5026

WHAT IS IT?



Kevan and Linda Sunderland send us these photos taken of a specimen dredged in 100 fathoms, east of Key West, Florida. It is 29mm. From the

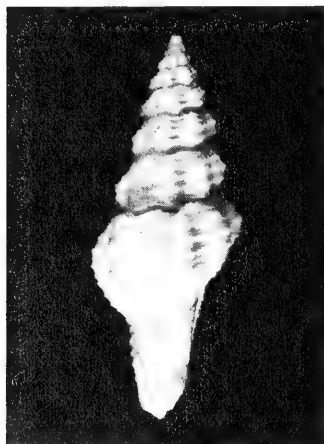
Fred Leonard Collection, it is also "from the collection of Donna and Riley Black."



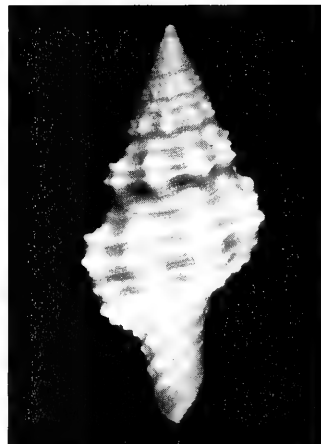
This *Fusinus* species, also submitted by Kevan and Linda Sunderland, was taken in 200' by a shrimp in the Gulf of Venezuela.

WESTERN ATLANTIC LATIRUS

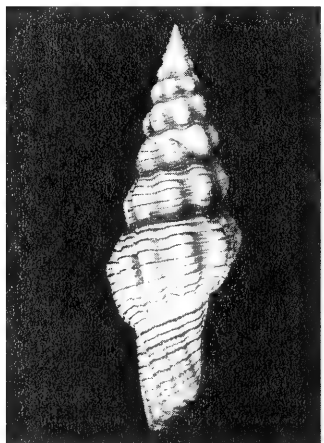
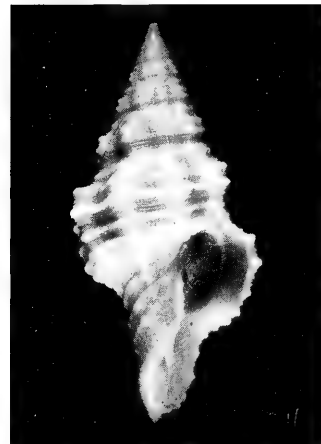
by Kevan and Linda Sunderland



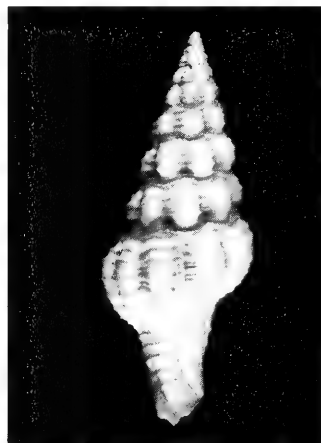
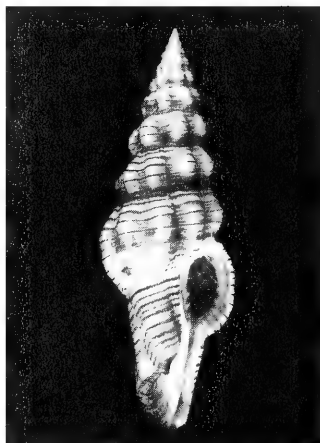
Latirus bernadensis Bullock, 1974. 52mm. 600', dredge. Barbados. Ex. Finn Sander coll'n.



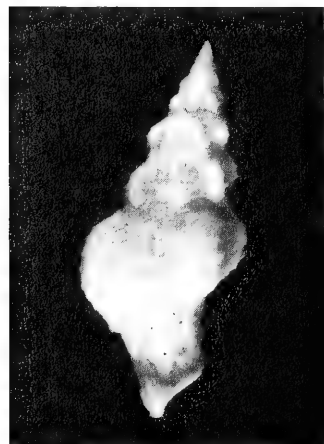
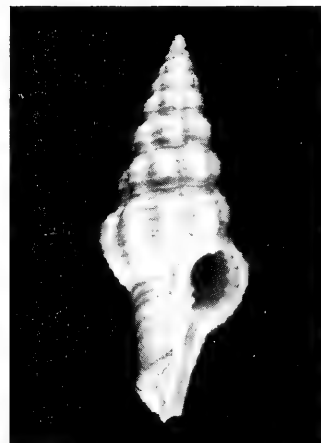
Latirus cuna Petuch, 1990. 36mm. 70-120', dredge. Porto Bello, Caribbean Panama.



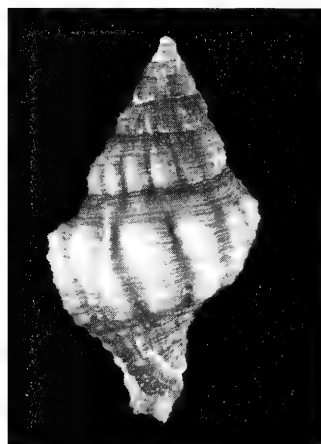
Latirus infundibulum Gmelin, 1791. 83mm. 200', shrimp. N. coast of Colombia.



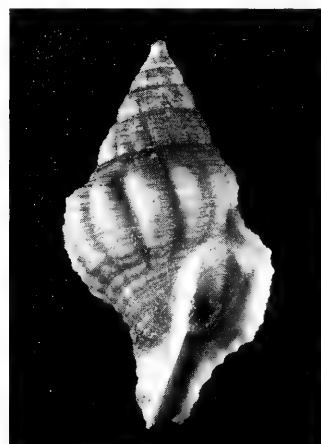
Latirus infundibulum Gmelin, 1791. 55mm. 200', shrimp. Georgetown, Guyana. Light pattern.



Latirus macmurrayi Clench & Aguayo, 1941. 55mm. 700', trap. Tamarind, Grand Bahama. Ex. Bob Quigley coll'n.



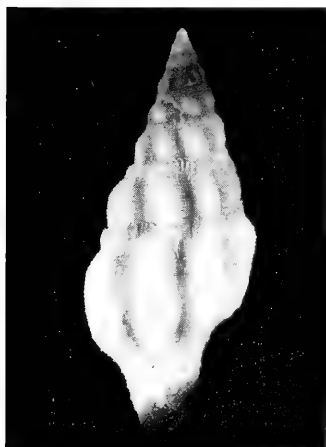
Latirus martini Snyder, 1988. 30mm. 8-20' under coral slabs. NW Roatan Is., Honduras.



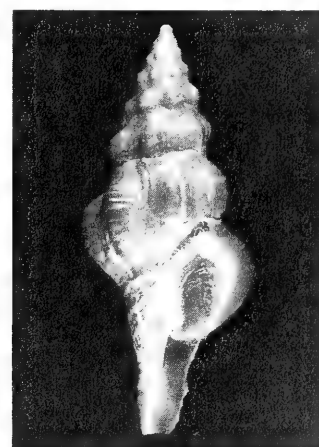
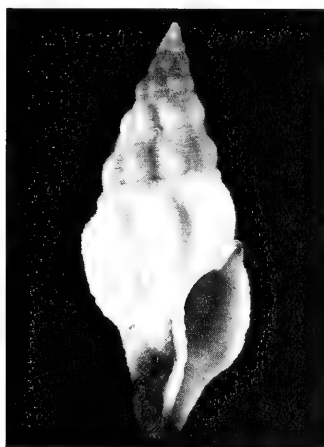
Note that there was a data error in the December centerfold, "Western Atlantic Fusinus Part 2." *Fusinus closter* is not found in the Gulf of Mexico. The data should have read: "200-300', by shrimp off Colombian-Venezuelan coast."

Our thanks go to Dr. William G. Lyons for keeping us under his scrutiny and on our toes.

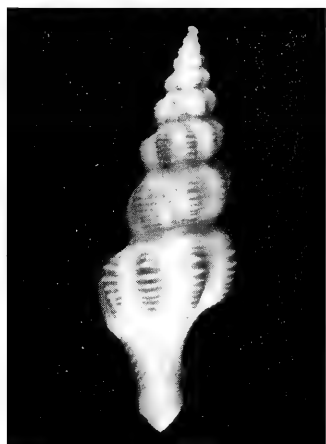
The intent of these centerfolds is not necessarily to distinguish among valid and invalid species, but to illustrate taxa that are not commonly seen in popular literature, solely for the information of the collector.



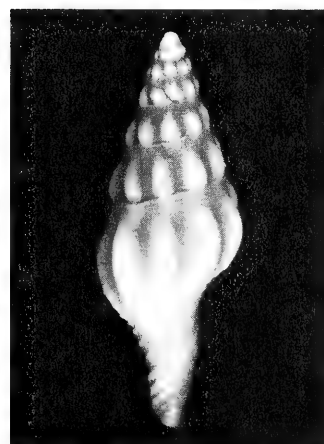
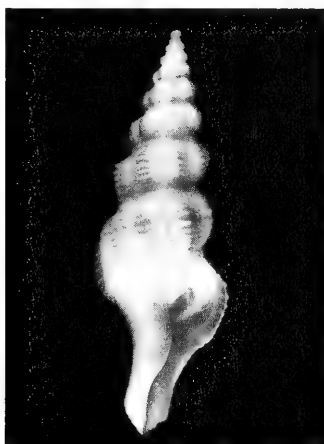
Latirus nematus Woodring, 1928. 35mm. 40', diver. Settlement Point, Grand Bahama. Ex. Bob Quigley Coll'n.



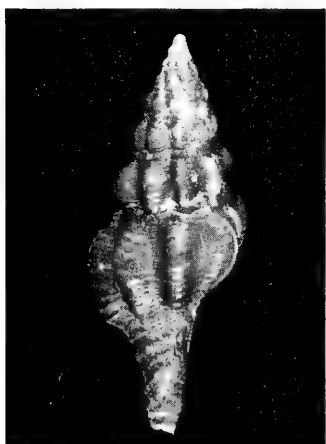
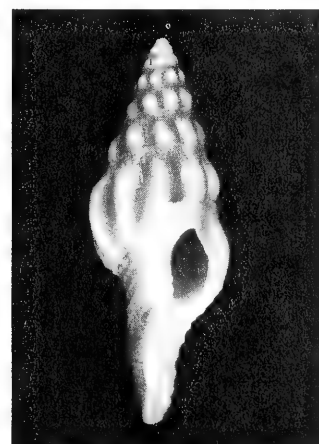
Latirus ogum (Petuch, 1979). 39mm. 20-25m, diver. Guarapari, Espirito Santo, Brasil.



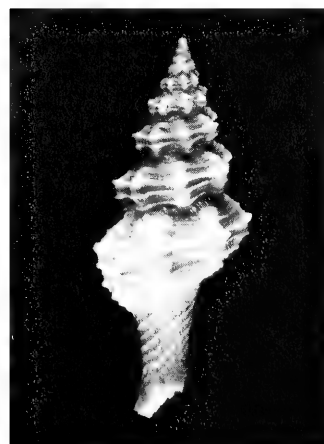
Latirus varai Bullock, 1979. 58mm. 100 fms., trap. Gibara, Oriente Prov., Cuba.



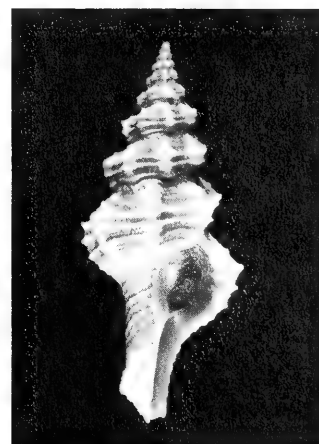
Latirus virginensis Abbott, 1958. 32mm. Dead on beach after storm, South Bimini.



Latirus virginensis Abbott, 1958. 29mm. 30', diver, reef. Utila, Bay Islands, Honduras.



Latirus species. 46mm. 30-35m. By shrimper. Off Victoria, Espirito Santo, Brasil.



REFERENCES:

- Abbott, R.T. 1974. *American Seashells*.
 Bullock, R.S. 1974. A Contribution to the Systematics of Some West Indian *Latirus* (Gastropods: Fasciolaridae). *The Nautilus* 88(3): 69-70.
 Lyons, W.G. 1991. Post-Miocene Species of *Latirus* Montfort, 1810 (Mollusca:

- Fasciolaridae) of southern Florida with a review of Regional Marine Biostratigraphy. *Bul. Fl. Mus. Nat. Hist. Bio Sci.* 35(2): 131-298.
 Petuch, E.J. 1979. New Gastropods from the Abrolhos Archipelago and Reef complex, Brazil. *Proc. Biol. Soc. Wash* 92(3) : 510-526.
 _____. 1987. *The New Caribbean Molluscan Faunas*.

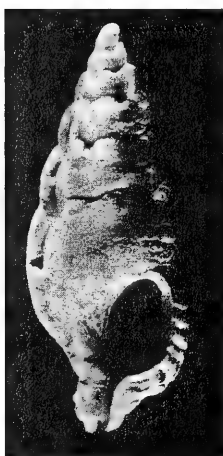
LETTERS:

Thora Whitehead writes: Just a short note regarding the *Aspella* species (p. 24, June 1995). . . . It looks very similar to a shell figured by Winston Ponder (1972) as *Aspella producta* (Pease, 1861) [see illustration]. . . . A very wide distribution is given for the species. . . however, the east coast of America is not listed. If the Florida shell does prove to be *A. producta* it would seem to be a very interesting extension to the known range, and perhaps a first record for the East Coast.

172 Burbong Street, Chapel Hill, Q'ld 4069, Australia

In a post script to a later letter, Thora noted that in the new *Seashells of Eastern Arabia* by Bosch, Dance, Moolenbeek and Oliver, p. 452, *Aspella producta* is shown to occur on Masirah Island.

Coincidentally, Roland Houart and Dr. Emily H. Vokes have recently published an article on *Aspella anceps*, the type species of the genus. It is similar to and sometimes confused with several other species, including *A. producta*, but the holotype (pictured here) has always been thought too eroded to be recognizable. *A. anceps* is definitely from the Mediterranean, and is conspecific with both a Pliocene and a Pleistocene fossil species from the Mediterranean region, and records from Indo-Pacific localities are obviously other species, Say Houart and Vokes in "On the Identity of *Aspella anceps* (Lamarck, 1822) (Gastropoda: Muricidae)" published Sept. 30, 1995 in *Bolletino Malacologico*.



Aspella producta [from W.F. Ponder's "Notes on some Australian genera and species of the family Muricidae (Neogastropoda) in *J. Malac. Soc. Aust.* 2(3): 229 and pl. 23] Its range is shown to be from Central West America, the Galapagos and Hawaii to Queensland, the Torres Straits, New Hebrides and Mauritius.



Kevan Sunderland's photo of John Chesler's *Aspella* species from Hollywood, Florida. Note the tiny denticles in the aperture, also present on *A. producta*.

Aspella anceps holotype

Peg Carpenter (among others) wrote to inform us that some information contained in the December tribute to Tucker Abbott was incorrect. To set the record straight, we quote Peg:

Sue [Darwin Abbott] was not his wife no. 1. She was his second wife. Mary was the mother of his three children, Carol, Robert and Cynthia. The other children mentioned belong to his 3rd wife, Cecilia, not Tucker. . . .

12563 Quincy Adams Court, Herndon, VA 22071

We should add that it is beside Mary that Tucker was laid to rest in Arlington National Cemetery.

Emilio Power writes, "I have received several emails from Carole Marshall re: New shell bans on Florida West Coast, Keys bans, etc. She is going at it alone, it seems. It is a crying shame that COA, having many resources at its disposal, does not create an educational and professional presentation which could be given out to individuals as well as shell clubs. These would be of use in confronting local level informational meetings such as those Carole has attended. Carole has had to do it alone! If others have lone confrontations at these meetings, a non-cohesive front or message is being presented. A clear message must be presented that points to pollution and habitat alteration rather than amateur collectors as the main factors in mollusc population decreases, if the decreases are true and documented. In most cases the "call" for the bans is mass hysteria of the environmentalists! Alas we have no more Tucker Abbott to lean on. . . I will be glad to collaborate in any way I can."

4812 Union Cypress Place, West Melbourne, FL 32904

1992-1993 INDEX AVAILABLE

A 1992-1993 index update to the *American Conchologist* is available, and a 1994 index is nearing completion. Please send your request for the 1992-1993 index along with \$1.25 to cover copying and mailing costs to Publications Director Betty Lipe, 440 75th Avenue, St. Petersburg Beach, FL 33706. If you want a copy of the original 20-year Index through 1991, send your order with \$4.00 to Hank Foglino, 4 Trent Court, Smithtown, NY 11787. Back issues are also available from Hank.

HAVE YOU MADE YOUR DONATION TO THE COA AUCTION?

The 24th annual COA Convention will be July 15-19 in St. Petersburg, Florida. The annual auction, held during the convention, is the major fund-raising event for COA. The proceeds go primarily to fund our very important educational grants program.

Donations are needed for the oral auction, silent auction, door prizes and raffle. As the 1996 Auction Chairman, I am requesting your support. Donations of rare shells, specimen shells, shell books, shell art, and other shell-related items would be greatly appreciated.

If possible, I would like to receive all donations by June 1, 1996. This will allow time to prepare donations for the auction and compile the auction list. I hope to see you all in July.

Please send donations to:

John L. Jacobs, Auction Chairman

202 Soldier Court

Seffner, FL 33584

or call me at 813/886-2644.

MUSSELS, A SNAKE AND A WOUNDED COLLECTOR

by Douglas N. Shelton

Friday, September 8, 1994 was a day that I will remember as long as I live. I was working a mussel survey project for the USDA Forest Service in the Conecuh National Forest in South Alabama. On this particular day I was accompanied by Forest Service biologist Leigh Ann McDougal. Our first stop of the day was Five Runs Creek, a tributary to the Yellow River, at Covington County Road 24. We arrived at the site about 10:00 a.m. I donned my chest waders, grabbed my glass bottom bucket and other supplies, and was in the water by 10:15 a.m. The water was muddy in the area just below the bridge, so visibility was at zero with a depth up to one meter.

Soon after I entered the water I felt a strong burning sensation in my lower left leg. It was very uncomfortable but I moved on. As I continued upstream I noticed my waders had developed a slow leak in the left leg.

Upstream of the bridge the water was crystal clear, making our search for mussels much easier. This site was not one of our most productive sites, but one of the few during the survey where we actually found mussels.

At lunch time we left this collecting station to go to a nearby catfish restaurant. When I removed my waders I noticed a bloody red area on my left leg about 10 cm above my ankle, rubbed raw by my waders. At the restaurant I cleaned the bloody wound and bandaged it with an application of Neosporin.

After lunch we worked until late afternoon, and then I drove two hours back to my home in Mobile. After a hot shower, I cleaned and dressed the wound again, taking but little notice of the growing discomfort. Sleep did not come easy that night because of seemingly poor circulation and pain in my leg.

The next day, Saturday, I lounged around the house, played with the kids, and even went on a lengthy (more than 30 minutes) trip to the mall with my wife. My leg was uncomfortable, but it did not hold my attention. This evening was a repeat of the last: sleeplessness due to the growing discomfort from my leg.

Sunday brought church, a sleepy afternoon, and church again in the evening. During church that evening my leg began to feel hot. I gently rubbed the wound but thought little about it. Later we took the kids to McDonalds, as we often do on Sunday evenings. While sitting on the McDonaldland playground my leg began burning intensely and I developed a slight fever. I lifted my pants leg to discover my leg was black and swollen from my ankle to my knee. When I saw the blackness I realized immediately I had some sort of poison in my leg. Suddenly I remembered the slow leak in my waders and when I was first aware of the wound on Friday. "Oh, no!" I said silently to myself, "Snake-bite!"

My wife drove me to the emergency room at Providence Hospital in Mobile. The doctor-on-duty saw me in a very short time. Never before had I been seen by an emergency room physician so quickly. He probed the wound and performed other examinations, the details of which I no longer remember. In short, he concluded I had indeed been snake-bitten. He stated that since I had been walking around on the leg for two days with no worse symptoms, he was not going to give me anti-venin. He administered antibiotics through a hypodermic and prescribed the same for oral consumption. He gave me orders to stay off the leg as much as possible.

The leg slowly healed, taking a total of about two months. Two weeks after the incident, our company's botanist and I were

attempting to patch my waders so I could finish the mussel project. In the process we located five sets of fang marks on the lower left leg of my waders. I never saw the snake, but we now believe that when I entered Five Runs Creek I must have stepped on a water moccasin. In its pain it struck out in defense several times. Fortunately for me, only once did the snake's fangs make contact with my leg.

I was fortunate, although my greatest fear had become reality. After the incident I thought that since I had been bitten and had no great difficulty I would be over my fear of snakes. Not so! My fear is greater than before. I usually give snakes a wide berth when I can. However, just about six months after that I was doing a mussel survey on the Paint Rock River in North Alabama. A water moccasin actually entered the water charging me. While in full speed reverse (in chest waders again) I unloaded eight rounds from my 9mm Glock in the vicinity of this aggressive serpent. Incidentally, I now always carry my gun with me in the field wherever I may legally do so.

I knew I could not hit the snake in the water, especially with the adrenalin pumping at the rate it was, but I got the bullets close enough that it did retreat and leave me alone. Maybe it was the noise rather than the "accuracy" of my shooting. Whatever, I was grateful to be spared a second "too-close encounter."

It is now more than one year since I was "snake-bit." I am much more careful in the field, sometimes too wary. I have seen a lot more snakes. Yes, I still fear them, but I must face my fear every time I go collecting freshwater mussels.

My leg, though long healed, is not without lingering problems. The area around the old wound is almost always discolored. Sometimes you can still see the fang marks. The real problem is occasional sleepless nights due to the apparent poor circulation in my left leg. Sometimes even the wound itself still causes pain, either real or imagined. Others who have been bitten by snakes tell me they still have circulation problems in the extremities near their wounds. At any rate, I have a continual reminder of my day at Five Runs Creek.

How do I feel about the incident now? Grateful. I am grateful that the wound was no worse and I am very grateful that on that day I did not see the snake. If I had, it might have been death by heart attack.

The Cottonmouth, Water Moccasin, or Cottonmouth Moccasin Agkistrodon piscivorus, is a dark, heavy-bodied, wide-headed pit viper 2-6" long, usually unpatterned, and one of the most dangerous snakes in the U.S. Its range is from eastern Virginia, the eastern Carolinas and all of Georgia but the northeastern highland tip, south to the northern Florida Keys. Common throughout Florida, in southern Georgia, and southeastern Alabama as the subspecies A. p. conanti, it may here have dark crossbanding on a lighter ground. The western subspecies, A. p. leucostoma, ranges through southwest Illinois, Kentucky and Tennessee, southern Missouri, western Alabama, all of Mississippi, Louisiana and Arkansas, and the eastern halves of Oklahoma and Texas.

Water Moccasins live in all fresh water habitats: swamps and sloughs, rivers and lakes, bayheads, irrigation ditches, canals, and even rocky mountain streams to 1500'. They prey on other snakes, fish, frogs, birds and sirens. Difficult to scare away and noted for bad tempers, they stand their ground and gape at any threat, showing off the "cottonmouth" they are famed for. They swim with their heads out of the water, while other snakes swim submerged. They obviously can bite under water. Doug's first attacker was likely submerged to capture prey when he stepped on it.

KATHERINE VAN WINKLE PALMER (1895-1982-1995)

by Harry G. Lee

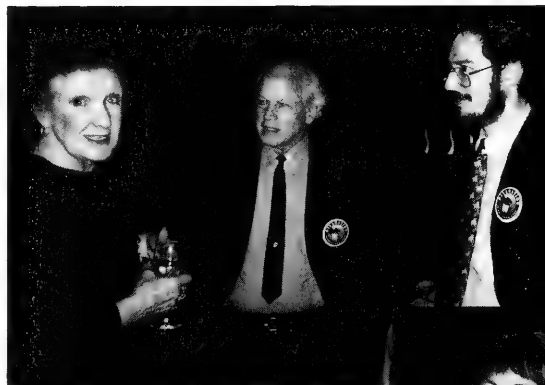
To geologists and paleontologists one hundred years is a fleeting instant. By proportion, within the time elapsed since the separation of the Caribbean and Panamic molluscan faunas, a century approximates the proverbial fifteen minutes of fame within a human lifetime. Yet paleontologists, to our knowledge, are exclusively human, and our species takes measure of a century with special celebrity and reverence. Thus it came to pass that the eminent paleontologist Katherine Palmer was honored, albeit posthumously, on the hundredth anniversary of her birth date, by members of the scientific community and other friends. In May, 1995, the birthday party was convened in Ithaca, New York, where the late scientist performed most of her life's work.

Katherine was born, raised, and received her college education in Washington state. She came east to pursue graduate studies under Prof. Gilbert Dennison Harris (1864-1952) at Cornell University. Harris was one of the pre-eminent paleoconchologists of his day, and his student proved to be cut from the same fabric. After receiving her PhD in 1926, Katherine left Ithaca for a short while. Six years later she joined her mentor and a handful of other scientists to found the Paleontological Research Institution, breaking bonds with Cornell and moving to a location in Ithaca. (To this day, P.R.I. is the only free-standing academic institution dedicated solely to the discipline of paleontology.) Katherine became a Life Trustee of the P.R.I. in 1935 and served as its Director from 1951 to 1978. During her tenure, P.R.I. advanced its mission by continuing the publication of *Bulletins of American Paleontology* (founded by Harris the year of Katherine's birth and now approaching its 350th number) and *Paleographica Americana*, expanding its educational activities, and conducting research, including her own prodigious work on the Paleogene marine mollusks of the American Southeast. Along with the products of her extensive personal field work, she oversaw a great expansion of P.R.I.'s collections from various contributors. (Today, P.R.I. has thousands of primary type specimens, mostly mollusks, tens of thousands of catalogued lots, and over a million specimens.) She helped build a mighty library — often through the use of her personal resources.

Ceremonies at the birthday party were hosted by P.R.I. Director Warren Allmon and included reflections on Katherine's life and accomplishments, a display of memorabilia including an oil portrait by Phyllis Rosenberg (Mrs. Gary) derived from an archival photograph, cocktails, a sumptuous meal, and an illuminating talk on the topic of women in paleontology, delivered by Dr. Carole Hickman of the University of California. The dozens of friends who came to pay Katherine tribute included conchologists from all corners of the country. A few are depicted in the accompanying photos.

Thus Katherine Van Winkle Palmer was fondly remembered on a centennial occasion as a token of appreciation for having led us across timespans of geological proportions, and her surviving friends proudly extended her well-earned ration of fame — well beyond a quarter hour's duration.

1801 Barrs Street, Suite 705, Jacksonville, FL 32204



L. to R. Elizabeth (Liz) Petit, Robin Palmer and Gary Rosenberg chat at the 100th birthday party of Robin's mom.

Carole Hickman, keynote speaker at the event.

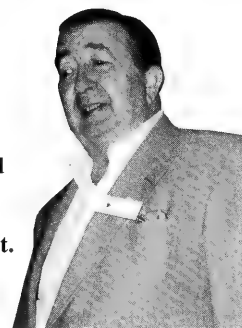


Emily and Harold Vokes traveled 1,000 miles to join the celebration.



P.R.I. Director Warren Allmon enjoying the festivities.

Dick Petit, long-time Palmer colleague and prodigious amateur paleontologist.



Ken Berry needs the 24-page booklet, *The Genus Harpa* by J. Berkhout (1992). Would any reader who has a copy to sell or who could loan Ken his booklet please contact Ken at 7513 Clayton Drive, Oklahoma City, OK 73132

PROPOSED INCREASE IN MEMBERSHIP RATES

by Linda Koestel, President, COA

The Board of Directors is recommending the following membership rate structure to become effective in 1997:

Individual, Family, Household & Organization — \$20.00
Honorary — No dues

For addresses outside the USA, Canada, and Mexico, the additional airmail postage will be:

Western Hemisphere — \$10.00
Europe — \$12.00
All Others — \$15.00

Since I am a lame-duck president, the Board of Directors decided I should be the one to tell you about our decision to ask for a rate increase. The question of raising dues has been arising almost as long as I have been an officer. The *American Conchologist* has expanded not only in size but in the information provided and the increased use of color. Also, printing and paper costs have risen dramatically during that time period. The current rate structure has been in effect since 1990 and does not cover the cost of producing and distributing *American Conchologist*. As we all well know, the cost of living has risen dramatically in those years, and COA is not immune to those increases. It now costs about \$6.00 to publish a single copy of our magazine. Do the math and you get \$24.00 per year. With membership rates of \$12.50 and \$15.00 per year, the magazine is not self-supporting, even with advertising income to help support it.

COA is committed to continued support of our Educational Grants program. The primary income for this

program comes from our annual convention. Our conventions are not always as financially successful as the 1994 Corpus Christi convention was, even though they are all very stimulating and entertaining. Over the last several years the Board has decided to decrease the amount of money that we have in reserve. This has been done primarily by increasing the amount of money we give in grants and by not raising dues. However, we do wish to at least maintain our current level of funding for grants and to increase that level in the future. So your dues will need to more closely support the cost of your *American Conchologist*.

As we all know, postage continues to rise, as well. To handle this increase we have separated the cost of the magazine (dues) from foreign airmail postage. We are also changing the categories for foreign postage from "Caribbean, South and Central America, and Countries outside the Americas" to "Western Hemisphere, Europe, Asia/Africa, and Pacific Rim," the divisions the US Post Office uses.

Those of you familiar with our Constitution and Bylaws know that a change in the dues results in a change to our Bylaws. The Board is also recommending a change to our Constitution and Bylaws that would no longer require the Bylaws to change whenever the dues change. The membership must, now, approve any change in dues at an Annual Meeting.

The Board of Directors hopes that this increase will allow us to continue to provide a magazine of the high quality that you have come to expect.

NEW SPECIES NAMED FOR COA MEMBERS

Donn Tippet's paper in *The Nautilus* (V. 109, No. 4), Dec. 29, 1995, "Taxonomic Notes on the Western Atlantic Turridae (Gastropoda: Conoidea)," names six new species of Turridae (and discusses and illustrates some previously described species). Three of these species are named for members of the Conchologists of America. *Sediliopsis riosi*, dredged off Sao Paulo, Brasil, is named for Dr. Eliezer de C. Rios. *Clathurella eversoni*, collected by SCUBA off Dania, Florida is named for Gene Everson. *Fenimorea petiti*, dredged in the Gulf of Mexico from Cedar Key to the Florida Keys, is named for Richard Petit.

ARGONAUTA PUBLISHES CONE ARTICLES

Cone collectors are having a field day! Now, along with the new *Manual of the Conidae*, Vol. 1, everything's coming up cones! The *Argonauta*, quarterly journal of the International Association of Malacology (A.M.I.), has three cone articles in recent issues. E. Rolán and G. Raybaudi Massila have "Spawning and Development of Mediterranean *Conus*: aquarium observations" in the Vol. IX (1-6) June 1995 issue, and the whole of Vol. VIII is a *Conus* number. December 1994 (7-12) contains D. Röckel's *Conus tuberculosus* Tomlin, 1937, a disregarded *Conus* species" and the 61-page extensive "New Investigation on the radular teeth of *Conus* — Part II" by Rolán and Massila, heavily illustrated with full-page color plates of *Conus*. (Part I was published in Vol VIII, No. 1-6, along with W. Korn's "An attempt in SEM Studies of *Conus* Egg Capsules.") For more information about these articles or for a subscription (\$50.00 per year to U.S.), write Roberto Ubaldi, President, A.M.I., Vicolo del Fosso del Fontanile, 20, 1125 Acilia, Roma, Italy.

SOUTH AFRICAN SHELLS ON STAMPS

Five exceptionally elegant species of South African shells are featured on a recent set of stamps issued by the South African Post Office. The commemorative stamps, known simply as "Seeskulpe" (or Seashells), are available in strips or full sheets. They have no denomination printed on them, instead bearing the words, "Standard Postage," and they feature *Afrovoluta pringlei*, *Lyria africana*, *Marginella mosaica*, *Conus pictus*, and *Cypraea fultoni*.

NEWS OF THE AMERICAN MUSEUM

The molluscan collections at the American Museum of Natural History were dealt a double blow this year, with the death of Senior Research Assistant and Collections Manager Walter Sage and the retirement of Department Chairman William K. Emerson. Part of the great void left by the loss of these two malacological leaders has been filled by Yae Ri Kim, who has been hired in Walter's position as manager of the volunteer staff who work with the collections. Born in Seoul, Korea, Yae Ri grew up in Hawaii, then did her undergraduate work in biology and marine biology at the University of Southern California, and her graduate work in physiology at Georgetown University.

Advertising in *AMERICAN CONCHOLOGIST* is presented as a service to our membership, but does not imply endorsement of the advertisers by *AMERICAN CONCHOLOGIST* staff or the Conchologists of America, Inc. Advertising space is available at the rate of \$105.00 for a half page, yearly rate (4X): \$380.00; quarter page: \$55.00, yearly rate: \$200.00; eighth page: \$35.00, yearly rate: \$120.00. Copy may be changed for any issue. **Deadlines are as follows: #1: Jan.15; #2: Apr.1; #3: July 1; #4: Oct. 1.** These deadlines will be strictly observed. Send advertising copy to the Editor, Lynn Scheu, 1222 Holsworth Lane, Louisville, KY 40222. All payments should be sent to Advertising Manager Glen Deuel, 8011 Camille Drive SE, Huntsville, AL 35802-3113. Make checks payable to Conchologists of America.

Flotsam and Jetsam



The *SPIRULA NEWSLETTER* just arrived on my desk; it's the newsy and rather informal little publication that alternates with the more serious and scholarly Netherlands publication, *Vita Marina*. Before it has the opportunity to float or sink or be crushed in the desktop logjam, I must report to you on an item contained therein: Entitled "A Limpet Lost Forever," by G.K., it details the first recorded extinction of a marine invertebrate in historical times. That species is *Lottia alveus* (Conrad, 1831), and no specimens of this once fairly abundant species have been collected since 1933.

This little limpet formerly ranged from Labrador to Long Island, feeding exclusively on eelgrass, *Zostera marina*, and inhabiting seagrass beds where the salinity was exactly 33 per 1,000. One more black mark for man, you say? Probably oil

spills or sewage outflow? Not at all. It did itself in by its own overspecialization. In the 1930's, when a fungus wiped out most of the *Zostera* beds, *Zostera* survived, because it could tolerate brackish water, while the fungus couldn't. Unfortunately, neither could salinity-specific *L. alveus*, and the little limpet, with nothing to eat, passed from this earth forever, a victim of its own over-particular nature. Less specialized *Zostera* recolonized its former range, minus one little grass-eating limpet.

I was especially interested to note that I first read about the demise of this exclusively North American species in a European publication. If you'd like to know more, G.K.'s reference is:

Carlton, J.T., G.J. Vermeij, D.R. Lindberg, D.A. Carlton & E.C. Dudley, 1991. The first historical extinction of a marine invertebrate in an ocean basin: the demise of the eelgrass limpet *Lottia alveus*. *Biological Bulletin* 180: 72-80.



KNOW YOUR COWRIES

by Betty Hunter

So... you have been collecting cowries and cones for 35 years and know everything about them and their names. Retired Latin teacher Betty Hunter has prepared some 25 question quizzes so that you may put your acquired knowledge to the test. Those answering all 25 correctly may go to the head of Ms. Hunter's class, but should begin studying immediately to prepare for her next installment in this series entitled, "Know Your Cones."

Note: Answers may include validly proposed names which have been relegated to synonymy, sub-specific names, and forms

1. What two cowries need a set of dentures apiece?
2. What cowrie seems amiable and very sociable?
3. What cowrie is most in need of a flea bath?
4. What cowrie might be found in Ft. Knox?
5. What cowrie describes a heavenly choir?
6. What cowrie seems perplexed and indecisive?
7. What cowrie gives its name to one of Chaucer's *Canterbury Tales*?
8. Eight cowries might inhabit a zoo. Name five of them.
9. What cowrie might be described as secretive?
10. What cowrie shares the name of a camera, suggesting that the camera/cowrie can see with a hundred eyes?

11. What melancholy cowrie might need psychiatric help?
12. What cowrie might easily avoid capture or detection?
13. What cowrie suggests the two times a year when day and night are of equal length?
14. What cowrie names a benefactress of Columbus?
15. What cowrie might visit a soup kitchen or a restaurant very frequently?
16. What cowrie takes a whole season for a vacation?
17. What cowrie might serve as a steersman for a racing shell, directing the rowers?
18. What cowrie names the air sacs in the lungs?
19. Two of these cowries are often part of a wedding ceremony.
20. What two cowries suggest the part of a page of a book outside the print?
21. Which cowrie may be obtained in a bar or lounge?
22. What cowrie gives its name to a dreaded bacteria often found in clusters like a bunch of grapes?
23. What cowrie might be described as "a good egg"?
24. What cowrie would most likely be found in bus stations, train stations, or on a safari?
25. What cowrie suggests a common household pet?

Answers will appear in the June issue.

BAILEY-MATTHEWS SHELL MUSEUM GRAND OPENING, NOVEMBER 18

by Bill Hallstead

With Tucker Abbott's benevolent aura very much present, Sanibel's Bailey-Matthews Shell Museum opened grandly to some 300 guests, including publicity-shunning Anne Morrow Lindbergh. Her 1955 book *Gift from the Sea*, still in print, serves as an inspiration to shellers everywhere, and to Shell Museum devotees.

Introduced by Museum Board President Harold Tovell, speakers at the November 18 Grand Opening included representatives of state, county and Sanibel governments, and the Smithsonian's Jerry Harasewych who eulogized founding director Abbott. Tucker, long in ill health, had died just 15

1077 S. Yachtsman Drive, Sanibel, FL 33957 941/472-9397

days before. The ceremonial ribbon was cut by Tucker's widow, Cecilia, and daughter, Cynthia Abbott Sullivan.

As the guests enjoyed refreshments among the 22 exhibit hall presentations (with more to come), the hit of the day appeared to be the exhibit devoted to dangerous mollusks. You could almost hear Tucker's chuckling as he planned this one. Its schistosomiasis info — among other molluscan horrors — is guaranteed to keep you from ever going barefoot in foreign snail habitats. In a way, that exhibit typifies Tucker's own sea-associated gift — his enviable ability to leaven the science of malacology with fun.

BOOK REVIEWS

Inner Dimensions, The Radiographic World of William Conklin, by William Conklin. W.R.S. Publishing Co., Waco, TX. 1995. xi + 101 pages, 11" X 11", hardcover. \$29.95. Order direct from W.R.S. Publishing by calling (800)299-3366.

An unusual book is appearing on the coffee tables of shell collectors around the country: *Inner Dimensions*, by William Conklin, a COA member from Orangeburg, S.C. We've all seen radiographic photos of shells, revealing the inner structure of a shell through a light and dark x-ray image. But to peruse a whole book of them, and one as beautifully assembled as this, is quite an experience. For one so enamored of the shapes and swirls of mollusk shells as a shell collector, it can amount to an uplifting journey of the spirit. We marvel at the internal intricacies of a well-clad carrier shell and its adornments, admire the precise mathematical progression of *Buccinum leucostomum*, wander the many-roomed mansion of the Emperor's Slit Shell, and cherish the *pas de deux* of a cowry shell with its inner bulla-child.

Forty-nine molluscs and a sand dollar have their secret complexities revealed by Dr. Conklin's photos, a full-page white image on black ground. On each facing page is a smaller, full-color photo of the shell itself, almost always a really excellent specimen, lovingly lighted and photographed, along with a standard short bio of the species, including interesting facts and anecdotes, size, locality and degree of rarity.

Completing each full-page spread: a scrap of appropriate poetry, selected by librarian and author Christine Boldt. The predictable shelly works by Victorians are there, including both "This is the ship of pearl" and the "Build thee more stately mansions" bit from Oliver Wendell Holmes' "The Chambered Nautilus." But there are other, more surprising and very apt, inclusions: The Junonia is teamed with Gerard Manley Hopkins' "Pied Beauty": "Glory be to God for dappled things...." and a quote from Plato's *Phaedrus* as comment on an *Achatina* land shell: "Beloved Pan, and all ye other gods who here abide, grant me to be beautiful in the inner man...."

Also of interest are the Introduction on shells and shell collecting by Alan H. Shoemaker, a South Carolina zoologist, and a Foreword by Professor of Radiology William W. Orrison, Jr. to provide the reader with a little background on radiology. This isn't a book you can't live without, but it's one that will bring you hours of peaceful contemplation on a subject close to your heart, the lure of the shell and its variations on a theme. And in these days of horrendously expensive shell books, it's quite a bargain. —L.S.

Atlas of Florida Fossil Shells (Pliocene and Pleistocene Marine Gastropods) by Edward J. Petuch, Ph.D. Chicago Spectrum Press, 1994. xii + 394 pages, 20 figures, 1 unnumbered photo, 100 plates, all b/w. \$60.00.

Anyone collecting Florida fossils has experienced great frustration trying to put names on his finds using the references available. All those *Siphocypraea* are rivalled only by the *Busycon* and *Melongena* for forms and variations. But Dr. Edward Petuch, of the Department of Geology, Florida Atlantic University, has done us a great service in pulling them all together in his new *Atlas of Florida Fossil Shells*. (The Pliocene and Pleistocene gastropods, that is. Eocene and those little Miocene species from the Panhandle are still in limbo for most of us.)

This heavily illustrated reference book is a pleasing 8 1/2" X 11" size, stitched and cloth-bound, and lies open nicely for study at any page. Open it to the Introduction and you have Dr. Petuch's interesting and informative overview of fossil study in Florida, including his own place in this continuum. Open it to the Acknowledgements and you'll see many familiar names, collectors of molluscs both fossil and Recent, who have assisted Dr. Petuch. Open it to Chapter 1, the Lithostratigraphy and Biostratigraphic Nomenclature of the Floridian Plio-Pleistocene, and you're on your way to learning how to tell a *Siphocypraea alligator* from a *Siphocypraea crocodila* (maybe). Here Dr. Petuch explains all those formations and units and such that keep a novice collector in a state of confusion. Charts, columns, maps, photos and Dr. Petuch's own charming drawings, called "ecological block" drawings, aid in our learning process. Chapters 2 and 3 cover "Faunal Types" and "Chronologically-Equivalent Units and Faunas."

There follows Chapter 4, the 100 plates, containing over 1,100 photographs arranged taxonomically by families. Most of these photos are clear and identifiable, though there is much room here for improvement. In many cases it is difficult to distinguish important details of the specimens illustrated, or even to tell one species from another. The photo reproduction process used is part of the problem. Figure captions are helpful, listing name, author, date, size, abbreviation for the unit(s) in which it occurs, and collecting locality. Coverage is broad: 29 species of cowries, 41 Olividae, 73 cones, and so on.

Chapter 5 is the "Systematic Section." Here, 283 new species are described, (holotypes of all new taxa are deposited in the Florida Museum of Natural History in Gainesville) as well as 10 new genera and two new subfamilies. For each new species, a description is given, followed by holotype information, Type Locality, Remarks (including comparisons of the new species to other similar species) and an Etymology.

A list of plates, a list of new taxa, a six-page list of literature cited and used, and an index conclude the *Atlas*. The index is arranged alphabetically by genera, which makes finding a species difficult if the genus is unfamiliar (or new). This book is, without a doubt, a more satisfying, better rounded fossil guide than have been any of his previous ones. It is going to make fossil collecting in Florida a lot more fun. But at a high price. We can only wish that Dr. Petuch had been introduced to Dr. Conklin's publisher. —L.S.

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SINAI SCUBA SAFARI with Isaac, the Crazy Israeli by Charles Glass

My friend, Mike Fainzilber, a student of Malacology at the University of Jerusalem, came to California to visit his relatives and scout out the possibilities of pursuing his scholastic career in this part of the world, and since he was in the area, asked me to arrange some California diving. Having written several articles on the Shells of Southern California for the *Conchologists of America Bulletin* (now the *American Conchologist*), I knew several good spots to observe the local molluscan fauna, so to speak. Now, not just through chauvinism, but for some very sound reasons, I consider southern California the second best spot in the world to dive! Well, make that the Santa Barbara Channel Islands. Which is the first, you ask? The Philippines, but that's another story.

Mike was politely appreciative of California diving but it only reinforced his resolve to return to Israel and his beloved Red Sea. His parting remarks were, "Come visit me in Israel and I'll show you some real diving in the Red Sea." I knew that the Red Sea was indeed renowned for its diving, but, I rationalized, that was just the sour grapes of those European divers who couldn't make it to the South Pacific and had to settle for second best. However, since I am interested in shells, and since there are many species endemic to the Red Sea, I thought I'd better take Mike up on his offer. The political situation stops a lot of people from visiting the Middle East, but I thought, what the hell, I've taken off for the Philippines in the middle of coups and revolutions so many times that my Filipino friends are sure I'm CIA: why not try the Middle East...and anyway, one Charles Glass had already been kidnapped — the odds were slim it would happen again...to me!

Something every traveller should experience at least once is going through Israeli security! No wonder they have no hijackings! My companion, Marty Beals of Los Angeles, and I were each grilled prior to boarding El Al in New York for at least 30 minutes — consecutively! It was finally decided that we could proceed, though we were admittedly two highly suspicious characters, pending arrival of our luggage from Los Angeles. Well, some of the luggage never arrived — par for the course, these days, with most of the airlines I travel on and of course the missing luggage HAD to be Marty's diving gear — so we were left with the dilemma: proceed *sans* equipment, or call the whole thing off. Marty opted for the latter, but I had an image in my mind of my poor friend, Mike, waiting for us at the Ben Gurion Airport in Tel Aviv, and so I persuaded Marty to come along with the assurance that, if his luggage didn't catch up, we'd get him SCUBA gear in Israel.

We were duly met by Mike, whose reaction to our news was that we had to be kidding. He expressed his appreciation that we came anyway, thus relieving him of the necessity of committing suicide rather than facing his cousin with the news that all plans were in vain. We taxied to the domestic airport and, after another half-hour's grilling by the anti-terrorist authorities, were off to Eilat at the northern end of the Gulf of Aqaba, finger of the Red Sea!

At Eilat we were met by Mike's cousin, Isaac Abramovich, "Divemaster International," owner and driving force behind



On the beach at Dahab — our bedroom furnishings.

"Isaac's Diving Safaris" and our guide-to-be for the next two weeks. Isaac is one of those rare phenomena, somewhere between a Hebrew Zorba the non-Greek and the fiddler on the roof, the sort of "unforgettable character" people try to describe, hoping to get published in the *Reader's Digest*. How to describe him? Well, let the story speak for itself, other than to say he has a characteristic and nonchalant swagger that makes him look as if he is wearing a quarter-inch wet-suit when he isn't! He's the sort of person you feel comfortable being with when the going gets rough — even if he hasn't got the solution to the problems at hand (he probably has!), he at least has enough jokes that he'll take your mind off the situation. His only shortcoming, and we're not talking about height, is that he is saturated with 10 years of Texas TV commercials, each of which he remembers *verbatim*!

Isaac properly but unnecessarily informed us that collecting live shells in both Israel and Egypt is forbidden, but we assured him that our main interests were observing...nor did we relish the idea of spending time in an Egyptian jail!

The next day we spent digging up — that is borrowing, renting and buying — enough SCUBA gear to properly fit out Marty for the first week of our Safari, doing a check-out or orientation dive in Eilat, and getting everything ready for an early morning departure. Near dawn the next morning, divemaster and safari leader Isaac was there with his van and our other three divers, Danny Korkos, originally from Morocco, another shell enthusiast and Mike's regular diving buddy; Yochai, a young Israeli on leave from his military service; and Lior, a cancer radiology therapist from Tel Aviv, also the least experienced diver among us.

Our early departure was an attempt to be first at the border: if one gets behind a tourist bus, the delay can stretch into hours. It worked — we got through with minimum inconvenience. Our van could accompany us as far as the Hilton Hotel in Taba, a short distance from the border. Then we must leave the Israeli van behind for an Egyptian vehicle and Egyptian driver we'd meet at the hotel. Once there we would also be able to change our money for Egyptian currency. The only problem was that just one vehicle, a jeep — or what the Filipinos would call a "Jeepney," a long-bed jeep — arrived. Isaac explained to the Egyptian agency with whom he worked that a second vehicle was needed, and it was finally arranged that the second vehicle would meet us in Nuweiba, about an hour's drive south. I couldn't quite imagine how our driver, Said, a guide, 7 divers and all their dive gear, including tanks, bed rolls and personal luggage, could make it is one jeep — very chummily, we learned. Fortunately divers are a good-natured lot, especially at the beginning of a trip, and we made it

Curador de Plantas, El Charco del Ingenio Jardín Botánico, c/o Can Te, A.C., Mesones No. 71, 37700 San Miguel de Allende, Guanajuato, México. Charlie was editor of *American Conchologist*, back when it was the *COA Bulletin* and he lived in Santa Barbara, CA. He was the other half of Abbey Specimen Shells with Bob Foster. But he has abandoned shell collecting (our loss!) and now lives with his other loves, the cacti of Mexico; he is curator of the Botanical Garden of San Miguel de Allende, north of Mexico City.

to Nuweiba with only minor discomfort and in high spirits. It was hot, but not uncomfortably so, with a slight breeze — Mike had suggested we plan our trip in the spring or fall as the best times in the Sinai Desert, neither too hot nor too cool!

The terrain was quite spectacular in its stark barrenness, rocky ranges of mountains coming right down to the sea, their outlines unsoftened by rain, their slopes unsoftened by vegetation. At the first stop, actually to fix a flat tire, for which — you guessed it — the spare was under all the gear, our Israeli soldier stripped out of his clothing and into more appropriate Beduin garb. At the first gas station/souvenir shoppe/coffee house, as we waited for the second vehicle, we started to feel we were really in Egypt, with passing camels and rugs thrown over palm logs upon which we could lie and rest and wait, while being served very strong, very thick coffee.

Our second driver, Faraj, a Beduin, arrived and we set out again, this time for Dahab and the first dive of the safari, at a site called "The Canyon." And a spectacular dive it was, made all the more impressive by the wonderfully theatrical orchestration of Isaac. Calling our attention with dramatic maneuvering of his impressively bushy and expressive eyebrows, he told us exactly how we were to follow him around the reef until, in about 30 feet of water he would stop by a pillar, wave goodbye and disappear through a cloud of colorful *Anthius* fish and hundreds of transparent glass fish.

We were to follow him through this cave entrance into a large, cavernous room, lit by a fissure in the ceiling. The room narrows as one descends, soon becoming a tall, narrow and rocky passageway, wide enough for a single file of divers. At about 110 feet we exited through the fissure in the top and returned to the beach. It was a fittingly dramatic, even awe-inspiring introduction to Red Sea diving. Making it all the better for me personally, the first shell I saw was a Murex, *Naquetia fosteri*! Quite an omen! It had been named for my partner, Bob Foster, some two years before and is quite rare indeed!

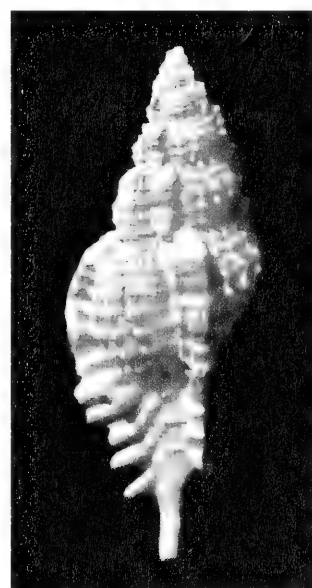
We dined on pita bread, cheese, beans, peas, cucumbers, tuna and sardines, jams and halevah, tea and Pepsi. Even though the Egyptians have a treaty with Israel, they honor the boycott of Coca-Cola and other firms that do business with Israel. Illogical, you say? The first night we arrived in Eilat, Isaac told us the story of the Turtle and the Scorpion. The Scorpion asked the Turtle to take it across the Red Sea on its back, to which the Turtle exclaimed, "You think I'm crazy? Half way across, you'd sting me and I'd die." The Scorpion countered, "Now why

would I do a thing like that? Don't forget, I'm on your back! We'd both die!" The Turtle thought that over and decided to take the Scorpion across, and half way across, sure enough, the Scorpion stung him! With his dying breath the Turtle asked, "Why did you do that? Now we'll both die!" The Scorpion responded, "This is the Middle East — you want logic?"

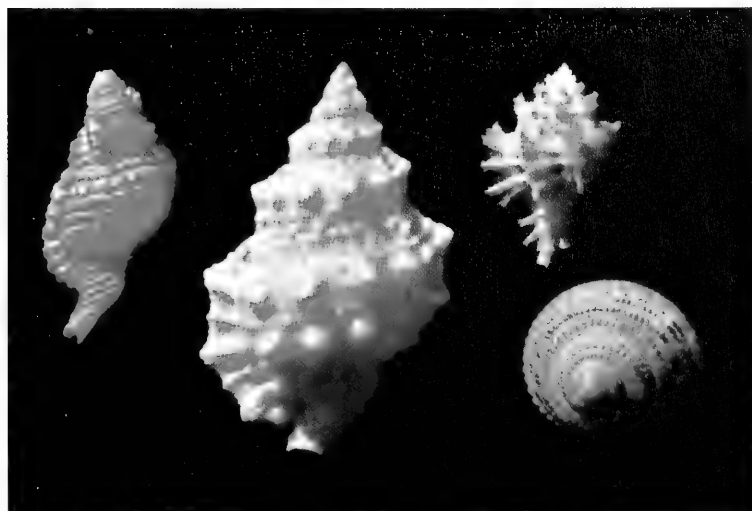
On to the dive center in Dahab where we got our tanks filled. While waiting, we thought we'd sample the local brew — my first and last taste of Egyptian beer! That night we were going to make a night dive at "The Lighthouse," a pleasant oasis at Dahab, a little bay proclaimed to be "Di Moon Valley, Raed Sae." There were many coffee houses here at the water's edge, catering to the divers, and the tea was exceptional as we awaited darkness for our dive, lounging on rugs thrown over palm logs for pillows. This spot was also a most fascinating dive, sheer rocky cliffs stepping down through steep slopes of powdery white coral sand. On this dive, aside from various cones and cowry shells, I saw another choice murex, a large *Homalocantha dovpeledi*, a strange, almost skeletal shell and another of the rarer and more interesting Red Sea endemics.

We drove a short ways out of Dahab and slept on the beach under stars as brilliant as they can appear only in the desert. Soon we were awakened by the sun rising over the coastal mountains of Saudi Arabia, on the other side of the narrow Gulf of Aqaba. Our driver, Said, said his morning prayers toward Mecca, across the water, and went on to prepare our breakfast of pita bread, cheese, beans, peas, cucumbers, tuna and sardines, jam and halevah, tea and Pepsi!

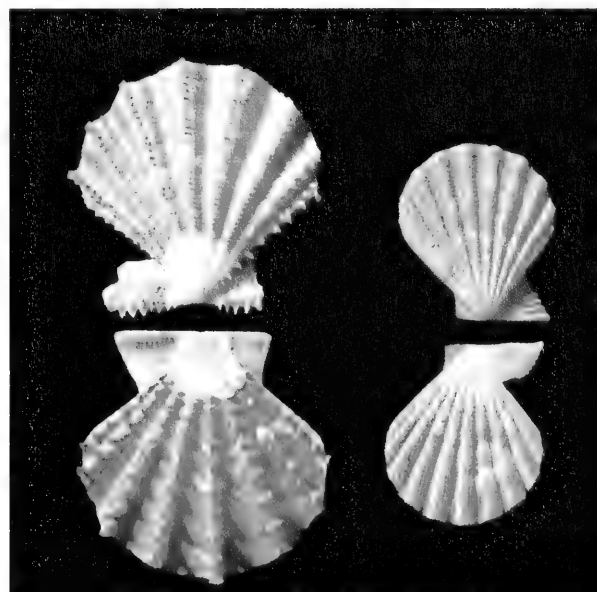
(Continued on page 26)



Red Sea Shells:
Naquetia fosteri



Red Sea Shells: *Cymatium marisrubri*, *Bursa granularis affinis*, *Clanculus cf. pharaonius*, *Marchia martinetana*.



Red Sea Shells: *Pecten rastellum*, *Pecten crouchii*

SINAI SCUBA SAFARI (Continued from page 25)

Early that morning, not too far from camp, we made what was perhaps the most spectacular dive of the trip, the pleasure and wonder heightened again by our divemaster's sense of the dramatic. The site, or "Zone de Plonger," as the signs say, is called "The Blue Hole" and is a very deep, very broad "hole" in the reef and quite near shore. Enshrined on the cliffs above the sea are two memorial plaques, marble remembrances of two friends and dive buddies who had drowned at this site, a Christian and an Arab. Isaac explained that Christians and Arabs tend to die at the Blue Hole, whereas it's the Canyon that mostly gets the Jews. Thus forewarned, we followed our leader into the water, but for nothing as unimaginative as a plunge right into the virtually bottomless Blue Hole! First he led us into a narrow hole, hardly big enough for one diver, called "The Bell." This led to a larger tube-like passageway that took us under the reef wall to emerge on the outside in about 100 feet. We made our way around this eerily beautiful wall, with some of the largest specimens of plate coral I had ever seen, many meters across, looking like giant fungi! We slowly worked our way up the wall and then over the top in just a few feet of water and into the Blue Hole itself. It is so wide that, even with the exceptional visibility of the Red Sea, one can scarcely see the opposite side. It's easy to understand how divers become hypnotized by the blue clarity of the water and just keep swimming down toward the light coming from the open sea through the bottom of the hole until they have passed the point of no return. Exhilarated from our dive, we got out of our gear and tore into a lunch of — oh, yes, — pita bread, cheese, beans, peas, cucumbers, tuna and sardines, jams and halevah, tea and Pepsi!

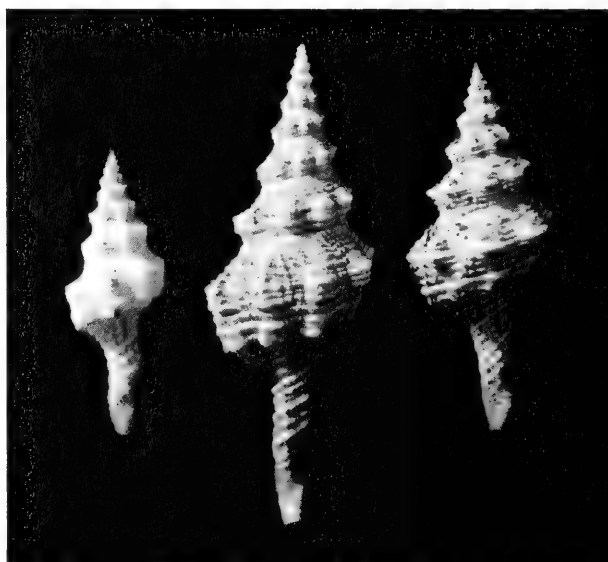
After lunch we drove south to Sharm el Sheikh where our divemaster had made arrangements for us to go by boat to the Straits of Tiran. Here the Gulf of Aqaba joins the Red Sea proper through a very narrow strait whose reefs and currents offer a Scylla and Charybdis to the tankers and freighters going to and coming from Aqaba. That evening we had a very pleasant dinner at the open air restaurant of the hotel attached to the dive center, the "Tentoria," our sort-of headquarters at Sharm. We met the skipper of our dive boat, Amin from Alexandria, a marvelously gracious and gentlemanly Arab with a prodigious stomach and imposing head of equally impressive proportions. We asked him if we could spend the night on board his boat, the *Nidia*, as there were no convenient beaches and the floor of the dive class school room that "Tentoria" hospitably offered us was a bit too hard. Amin was somewhat distressed as he had meant to have some last-minute clean-up done before we boarded. We assured him that wasn't necessary but that we would wait an hour before boarding.

The boat was luxurious, far better than most dive boats I've seen in southern California, especially since most of them are intended for 25 to 45 divers, and the seven of us had the *Nidia* to ourselves with Amin and his one-man crew-and-galley combination. We had chosen to sleep outside,

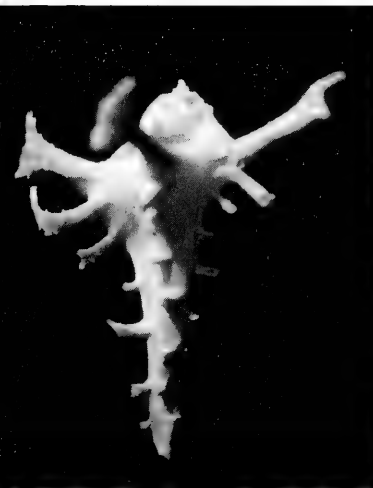
on the roof above the captain's bridge, and again the stars and slight breeze together with the gentle motion of the water made it a most comfortable night! We awoke to another cloudless morning sky, and to the considerate Sinai flies that only seem to bother you at sunrise and at sunset. I came to think of them as a sort of Beduin alarm clock! We were soon off towards the straits and our first dive in the Red Sea proper.

The first day on the *Nidia* we dived Gordon Reef, on the lee side, opposite a recent wreck on the reef, perched upright as if at any moment it would continue its voyage. Here we saw our first sharks of the trip, gray reef sharks more concerned with patrolling their territory. As we moved into the lagoon for the night, winds that must be characteristic of the Straits of Tiran came up and whipped the surface of the sea into a howling frenzy. We made a fairly shallow dive in about 10 meters, upcurrent from the boat, but throughout most of the dive I was busy berating myself for not having paid more attention to my compass courses: in no way did I want to surface short on air downwind of the boat for there would have been nothing to stop me until I hit Egypt itself! That night I got little sleep, holding tight to my sleeping bag, which was whipping in the wind like a flag, for fear it might blow away!

During all the dives so far we had not seen another diver. Not so the next morning at Jackson Reef, which was opposite another giant wreck poised on the edge of the reef in these desperate straits. We moved as early as we could to get a good mooring at Jackson, but still we were the second vessel there. Soon dive boats were streaming in from everywhere from Eilat to Sharm el Sheikh, even from Cairo! Dive boats were tied up to dive boats which were tied up to other dive boats. The water was a Keystone Cops ballet of divers. The underwater wall went down to 120 feet, and as I snooped and poked my way up the wall, I looked over my shoulder to find one diver with an underwater TV camera's zoom lens trained on me while another was focusing his Nikonos flash unit, and three or four other divers were just observing at various eccentric angles. The divers at least kept a minimum distance. A Sergeant-Major fish peered in my face mask while the absolutely fearless Black Tangs nibbled the mask straps and clown fish belligerently nipped at my knees to shove me away from their pet anemones.



Red Sea Shells:
Fusinus leptorhynchus



Red Sea Shells:
Homalocanthus dovpeledi

On our way back to the harbor of Sharm we made a last stop to dive a site called "The Temple," and I can well appreciate why so many dive sites are given names like "The Temple," "The Cathedral," etc., for their beauty inspires an awe that is indeed religious in quality; only the most insensitive diver fails to consider himself lucky, even blessed, to experience some of the unique underwater sights.

That night we went to Embarak's near Sharm el Sheikh, where Embarak, a Beduin, has created quite a dive center/open air restaurant/lodging complex right on a small bay. The service was slow but we were in no hurry and the barbecued fish was excellent. We laid out our sleeping bags right on the beach by the restaurant. In the morning Embarak arrived and warmly greeted Isaac.

Isaac can talk knowledgeably on nearly any subject and is as much at home in Israel as in Texas as in Tanzania as in the Sinai, but he has indeed found his niche in life and is unlikely to leave the Gulf of Aqaba. While comparing notes with some of his Egyptian associates he found that in three wars: the 6-Day War, the War of Attrition, and the Yom Kippur War, he and his

Egyptian divemaster counterparts had been fighting in the very same campaigns! We were there in the Sinai, in Sharm el Sheikh during Yom Kippur, 1989, the "day of atonement." How much better that we all, Americans, Egyptians and Israelis, could be there in mutual cooperation for our mutual benefit and enjoyment!

We made several more dives, working our way back north to Eilat, but the dives had subtly changed. The "chance of a lifetime" atmosphere had been replaced by a "next time we come we have to dive over there" attitude. Even Lior had changed. He was no longer a flailing menace in the water. Since Isaac had made a point of giving him the most attention under water, by the end of the safari his protegee was quite relaxed and competent. I had become accustomed to seeing Isaac floating with perfect neutral buoyancy, arms crossed, perhaps upside down, but quite calm and composed. Now there was Lior behind him, equally calm, composed, arms also crossed and also floating upside down if the spirit so moved him. Our divemaster confronted him and said, "Lior! You're starting to look like me under water!" to which Lior responded, "I know, that's how I learn to become a good diver!" And he did!

HABITAT SPECIFICITY

by Joan Hales

This article was previously published in Phasianella, Newsletter of the Port Phillip Shell Group in Victoria, Australia. The kind of observation the author makes and writes so ably about is the kind of observation that furthers our knowledge of mollusks, as well as our ability to find them. How observant are you when you are shelling? Is the shell itself all you notice, or do you look at the place you found it? Was it eating? And if so, what? Is there a large colony of this food nearby? Was there a hiding place nearby, or was it hidden when you found it? What other characteristics are discernable about the habitat? This is the sort of information you should keep in your catalogue. . . in fact, this is one of the best reasons for keeping a catalog. Notice that "catalog" ends in the word "log."

Over the past few years one of the most interesting things I have noticed is that some species of mollusks are *extremely* habitat specific. This was particularly noticeable to me up in the Dingo Beach area of Queensland, although it is also true here.

Take for example *Siphonaria zelandica* (in Macpherson & Gabriel as *S. baconi*). In *Coastal Invertebrates of Victoria* the habitat is listed as "flat surfaces on rock platforms, at upper middle to high tide levels." Absolutely correct, but every time I have found this species it is where a patch of sand meets that rock platform. Investigate the upper-middle and high tide levels around the centre of a large expanse of rock platform and you won't find it — not in this area, at least.

My second trip to the Whitsundays produced shells I did not see on my first trip, and some of the shells which were very common on my first trip were down to an occasional specimen. Due to circumstances, the second trip was not able to coincide with extreme low tides, but nevertheless, some interesting shells were noted, and I visited areas I had not visited the first time. Low tide does not last long enough.

Walking back on the beach/rock side of the mangroves, which were probably no more than 10 metres wide by 40 metres long, and peering among the mangroves, I spied a *Cassidula* sp. gliding upwards on the trunk to escape the rising tide. This was the first time I had found this species so I began a careful search and found a few more, but not that many, all

told. It was then that I noticed that there were two species of mangroves which have quite different trunks. The common one has a roundish trunk and puts out roundish-shaped tangles of roots. The less common (in fact, I found only three of them) has a trunk with flattened blades. I have a piece which was driftwood and it is almost like a staghorn fern leaf. It was on this species that the *Cassidula* was making its home.

At Nellie Bay there is a length of flattened rock high up the beach which is only covered at high tide. In the middle of this length of rock which is only around two metres wide, I found a *Nerita plicata*, then close by, a couple more, but no matter how closely I looked I could find no more. This very small area of about 30cm square seemed to be the appropriate habitat for the species. Other nerites such as *N. polita* and *N. squamulata* were very common. *N. albicilla* was also fairly common but occurs at a lower tide level. *N. oualaniensis* is also common in restricted areas where the substrate is a more muddy sand, mainly near mangroves. *N. balteata* (Syn.: *N. lineata*) can be found on the trunks of mangroves. *N. undata* was also very common and occurs around and under rocks at about half tide level along with *N. polita*. I also believe I found *N. chameleon* which was in the same area as *N. squamulata* but it is not particularly easy to tell the two apart.

The bivalve *Chama limbula* is very obvious as it cements itself to the tops of rocks. This is also found in the vicinity but in a very limited area. The only area of the rock which seemed to be suitable was on the southern side of the bay in a sheltered area north of a headland. There were no more within at least a kilometre in each direction. Lamprell and Whitehead in *Bivalves of Australia, Vol. 1*, give the length "to 90mm." Many of these shells would have been that high and were very well worn. The sculpture of "concentric rows of small flat spines, [that] form several rows of strong foliaceous lamellae posteriodorsally" was no longer evident.

A common shell, *Thais kieneri*, was found in the area but only on one rock. A search of similar granite rocks on either side failed to find even one specimen. The species was there on that same rock in both 1993 and 1994.

The moral to this tale is that many shells are so habitat specific that unless you search very thoroughly you are bound to miss species.

In Memoriam

Lucille Grier Taylor 1912-1995

Lucille Taylor, a lifelong avid shell collector, a stalwart 30-year member of the San Antonio Shell Club and a long-time member of COA, passed away November 22, 1995. She was known and loved by many people in and out of shell collecting, not only in San Antonio, but in Texas and across this country. She also made many friends in other countries by showing her natural interest in, and love of, all peoples, their cultures and their natural habitats. She not only loved the ocean and its dwellers, but indeed she loved all aspects of nature.

Besides her church and family, the San Antonio Shell Club was one of her primary loves, and she happily shared her knowledge of shells with everyone — teaching many, not only club members, but also individuals and organizational groups throughout the community. Lucille traveled throughout Mexico,

including both Mexican coasts. She and a friend were the first American women to explore Cozumel while it was still an uninhabited island, spending five days there escorted by a contingent of the Mexican Army. Her world travels included Australia and the Great Barrier Reef, Palau and other South Pacific locations, Belize, Puerto Rico, Honduras, Costa Rica, Panama, and much of the Caribbean, Egypt and the Red Sea.

She donated a number of shell collections for display in various Texas museums, as well as in state parks and libraries. Even in her last days, she never lost interest in what people in the conchological community were doing. She faced her cancer courageously and maintained her sense of humor. She was an inspiration to us to the end, as she was throughout her life.

—Rosalie Taylor

Earl Reed 1918-1995

On September 24, 1995, one of the world's most dedicated conchologists passed away after a brief illness. Earl Reed was one of the biggest influences in my life, as a friend, mentor, and fellow shell collector.

I first met Earl at a Connecticut Valley Shell Club meeting in 1980. Exactly 40 years apart in age, we became fast friends. I will never forget the impression his vast shell collection made on me: nearly 25,000 taxa neatly arranged in plastic containers, in turn housed in thousands of cigar boxes. Equally interested in land and fresh water mollusks, Earl's favorite family was the Muricidae — he had 600 taxa. I remember several very enjoyable evenings looking at Earl's fabulous murex. One particular specimen stood out in my mind, an enormous *Homalocantha tortua*.

Assistant Curator of the Springfield Museum of Natural History from 1958-1993, Earl was one of the original members of the Connecticut Valley Shell Club, which disbanded in the mid-1980's. He presented wonderful slide lectures to the club and was instrumental in planning a series of very successful shell shows featuring exhibits, dealers and interesting presentations.

More than most collectors, Earl was concerned with proper identification; he would go through 50 books for a clue to an obscure land shell, and delighted in solving nomenclatorial mysteries that soon would have frustrated others. Over the years Earl put names on many troublesome shells in my collection. Once I overturned a case of achatinellas which then flew in all directions. I put the hopelessly confused mess of shells and labels into a small box and sent them to Earl. Incredibly enough, within two weeks, he returned the parcel with

every shell matched to its proper data slip. His collection served as a superb reference.

A man of few words, Earl was never more enthusiastic than when talking about shells, and was always helpful to fellow collectors, swapping extra specimens generously. He will always be remembered for his gracious manner, gentle wit, and undying devotion to shells. Condolences are expressed to his widow, Alcine Reed and their two children.

—David DeLucia

Earl Reed (left)
and Paul Monfils
examine the
newly released
Compendium,
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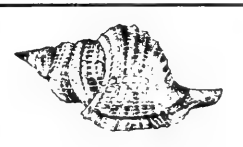
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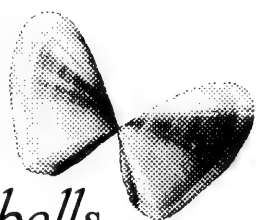
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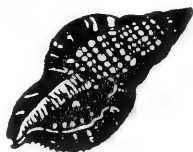
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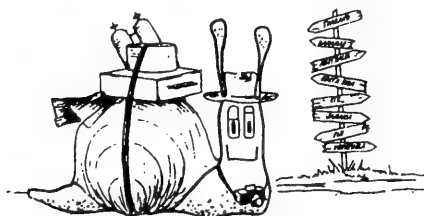
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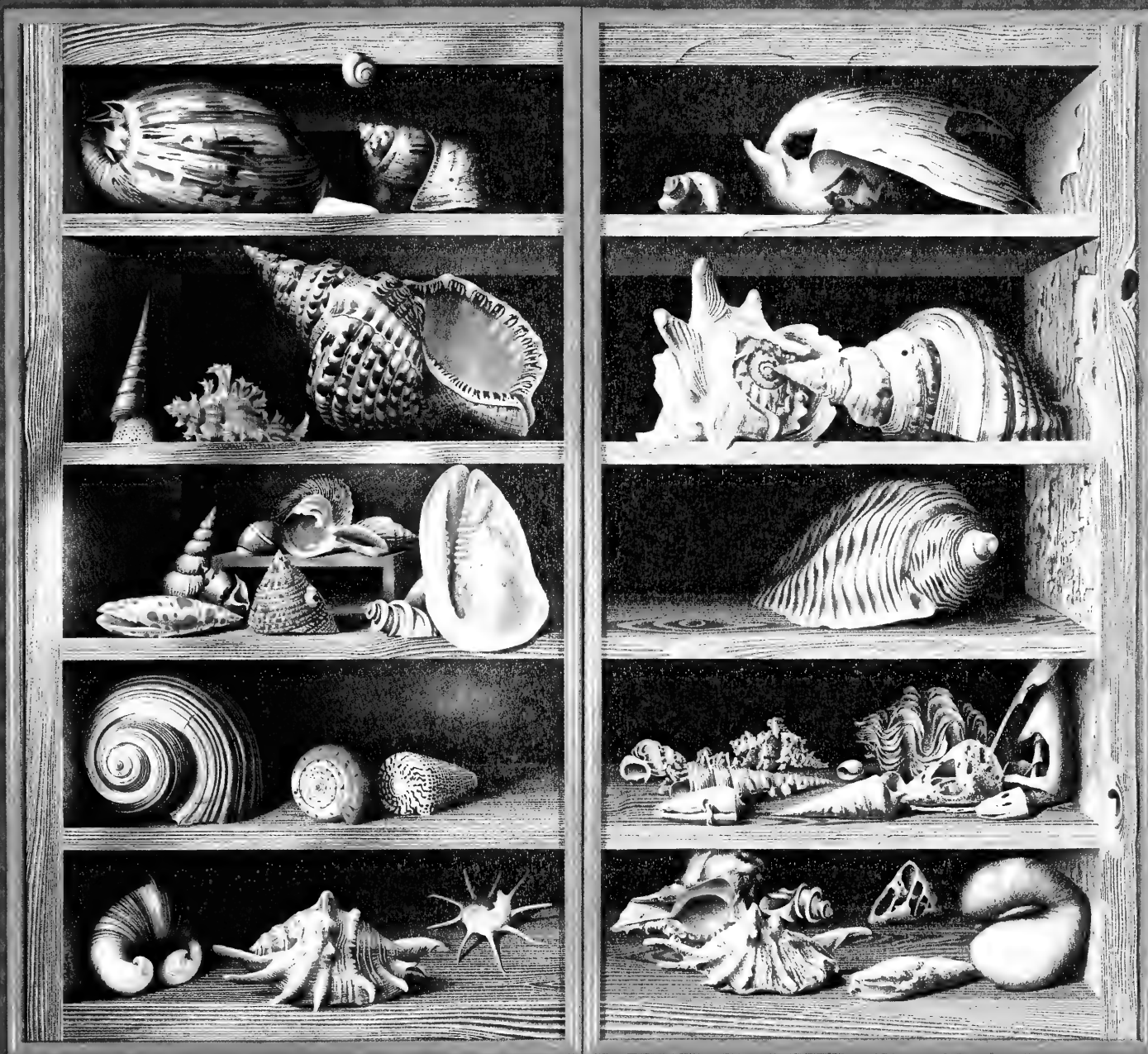
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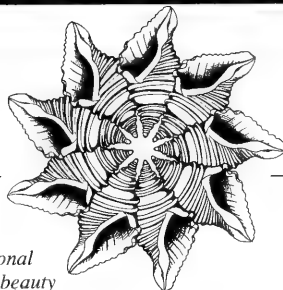


AMERICAN CONCHOLOGIST

QUARTERLY JOURNAL OF THE CONCHOLOGISTS OF AMERICA, INC.

VOL. 24, NO. 2

JUNE 1996



VOL. 24, NO. 2, JUNE 1996

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell enthusiasts — the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced conchologists, scientists and shellers from around the country and the world.

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COVER: The June cover artist is Hans Nicklaus, from Nurnburg, Germany. He also has a "little, orderly collection of seashells." Born in Halle/Saale, Germany in 1934, he spent many years working as a lithographer and studying portraiture in evening classes. Today he is a freelance artist, a surrealist in the mood of the old masters, with trompe-l'oeil a favorite technique. He is "always striving to understand the world," and to "transform three-dimensional objects on a two-dimensional flat with great accuracy" and "thinking whether the old masters would accept my work." The diptych adorning our cover, "What Beauty Is — I Don't Know," was painted in Acryl-colors, last year. Each panel is 91 X 51 cm. His wife Jo is also a painter. Our delighted thanks to Hans Nicklaus for this lovingly portrayed collection of shells. We are sure the old masters, Linnaeus, Roding and Gmelin among them, would be as pleased as we are.

PRESIDENT'S MESSAGE

These have been very interesting times for COA. Hard work is going into preparing our official Web Site/Homepage. COA's Listserv, CONCH-L, a mailing list on the Internet, debuted the middle of March. Since then we have had many lively discussions about a variety of shell topics there. We also have "met" many people from around the world. I encourage all of you to visit our new website and offer any suggestions for making it better.

I hope to see you all at the Annual Convention in St. Pete Beach. The St. Petersburg Shell Club has been working very hard. Have you signed up for the field trips? The Florida Aquarium is excellent! (The fact that there is a lighthouse on one trip did not influence my choice.) We are planning a program on COA and the Internet, an introduction to Cyberspace and a tour of our website, The Conchologist's Network, or ConchNet. It is for those of you who do not have access at home, so bring your spacesuits! Be sure to attend the Annual Meeting. We have much business to discuss, including the proposed new dues structure.

I have to bid you farewell as your president. It has been a most interesting two years. I want to thank everyone who has worked with me. It would have been impossible without your support. I am very glad to have served and am also very glad that it is time to pass on the gavel. I wish the new officers all the best for the next year.

In closing I would like to add that we are ready to accept bids for the 1998 COA Convention. If you've ever wished, while at a COA convention, that the club back home could be enjoying this experience too, here's your chance: bring it to them! Write for our program on hosting a convention, show it and discuss it in your club, then contact me. I'll guide you from there.

LINDA

Soon COA will bid farewell to Linda too, at least as our president. We owe her a great deal of gratitude for two long years of hard work, diplomacy, oil on troubled waters, friendly smiles, and the opportunity to poke, prod, pummel or otherwise paisley our President. She has led us through the loss of two of our finest members and forward into new challenges and experiences. When you see her at the convention, make a point of stopping and telling her of our appreciation. But don't polka dot or plaid her! Even she has her limits! Right, Linda?

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WARNING: Exercise extreme caution. This will be a very enthusiastic, preoccupied group. You could be trampled in the busy traffic! Hosting a COA Convention is one of the highlights of any shell club's existence, and members may be somewhat giddy with excitement.

COA IN CYBERSPACE

by Richard L. Goldberg

Does it seem like an eternity between our annual COA conventions? Are you hungry for more shell information between issues of our world renowned *American Conchologist* magazine? Would you like to have an immediate forum with shell collectors around the world? Maybe you'd like your children to learn a little more about shells. COA now has the answer for you.

COA has entered a new era with the recent inauguration of its Internet World Wide Web (WWW) site and its listserver known as **CONCH-L**. Both projects have been in development over the past six months under the direction of the Lambis Group, some dedicated COA members who have come together for the express purpose of putting COA in cyberspace.

The Conchologists of America, Inc. WWW site, **The Conchologist's Network**, went online recently, offering a wealth of information pertaining to COA, the organization, its committees and activities. It will function also as a resource for conchological information, educational pages, news of new species, illustrated articles, conservation information, lists of domestic and international shell clubs, shell shows and related events, links to other sites containing shell information and more. The power of the Internet will make all of this information available to you 24 hours a day, seven days a week, right on your computer. Information will be updated frequently to keep you current with the latest trends in the conchological world. To access the COA WWW site, **The Conchologist's Network**, also known as **Conch-Net**, type <http://coa.acnatsci.org/conchnet.html> on the address line of your Internet browser. Then, just bookmark us for quicker access. You'll want to visit often.

The Conchologists of America Listserv (Conch-L for short) is an email-based discussion group which allows you to send a message to the Conch-L central computer server, which will, in turn, distribute your email to all of its subscribers. Your message is then on its way in minutes to amateur and advanced shell collectors and professionals around the world who also subscribe to Conch-L. No more snail mail. As a subscriber to Conch-L you will also receive all messages posted to the server. Read more about email and

shell collecting in Debbie Wills' column, "A Day in the Life of a Shellnetter."

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Conch-L was created by Amy Edwards and resides at the Museum of Natural History, University of Georgia, in Athens. COA's **The Conch-Net** is maintained at the Philadelphia Academy of Natural Sciences under the watchful eyes of Dr. Gary Rosenberg. COA is greatly indebted to the Academy and U. GA for their generosity in hosting these sites for us.

The COA Lambis Group members came to the project with diverse backgrounds. Each has made significant contributions during the development stages. As co-chairman of the group, I serve also as content advisor and editor of a section on Land Snails. Lambis Group also includes Lynn Scheu as co-chairman, content advisor and content editor; Dr. Gary Rosenberg is scientific advisor and also overseer of the site at the ANSP; Deborah Wills is a technical advisor and Webmaster; John Caldeira is a technical advisor and Webmaster; Amy Edwards, besides managing Conch-L, is scientific and technical advisor and our resident artist; Tom Watters is scientific advisor and editor of the Freshwater section; Emilio Garcia is editor of the "News of New Species" section; Linda Koestel, as COA President 1994-96, is a standing Lambis Group member and advisor, and another representative of the COA Board of Directors, as is incoming COA President 1996-97, Dave Green. (In case you are wondering about the name of the Lambis Group, we're the Spider Conch in the World Wide Web).

Those of you not currently connected to the Internet will have the opportunity see and try out **The Conchologist's Network** in St. Petersburg at the COA convention July 15-19. A computer linked to the site will be available so that you can browse the pages and see what all of the excitement is about. Come on and join us there. See you in cyberspace.

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1996-97 SLATE OF OFFICERS

The Nominating Committee of the Conchologists of America announces the slate of officers for consideration for 1996-1997. This slate will be voted upon at the General Meeting of the 1996 COA Convention in St. Petersburg Beach on Tuesday, July 16, 1996.

The slate is as follows:

President: **Dave Green**, Houston, Texas
 Vice-President: **Linda Brunner**, Southport, Florida
 Secretary: **Jean Roe**, Portland Texas
 Treasurer: **Bobbie Houchin**, Louisville, Kentucky
 Trustee: **Rosalie Taylor**, Austin, Texas

The Nominating Committee consists of Bunny Cook, Honolulu, Hawaii; Barbara Elliott, Punta Gorda, FL; and Travis Payne, Decatur, Alabama.

OOPS!

Last issue (March, 1996) we had a rash of gremlins dashing through the magazine switching photos. We nabbed most of them, but one or two still slipped through. We want to undo their mischief here. In Emilio Garcia's article on *Dolicholatirus*, page 5, the little fiends switched captions for the two photos on the upper half of the page. The pale grayish shell with pink spiral ribs in the Rich Goldberg photo on the left is the *Dolicholatirus* from Apo Reef in the Philippines. Rich's photo on the right, the brown shell, is the *Dolicholatirus* taken from Malaita, Solomon Islands.

Gremlins got to "Letters," as well. On p. 18, the holotype of *Aspella anceps* is the shell on the right. The *Aspella* species from John Chesler's collection is the shell on the lower left. Also Thora Whitehead's reference to *Aspella producta* in *Seashells of Eastern Arabia* by Bosch, Dance, Moolenbek and Oliver should be page 113, no. 452. The gremlin there was your editor, as Thora so kindly refrained from pointing out to her. Apologies to all who were confused.

MYSTERY SHELLS OF THE FALKLANDS

by William O. Reid, MD

A trip to Antarctica had been a dream of mine since childhood. Finally my wife Ute and I were on our way. We flew to Santiago, Chile, where our group chartered a plane to the Falklands. These islands are located several hundred miles out at sea from the South American Continent at latitude South 52-53°. They are located in the Magellanic Shell Province which includes Antarctica and the extreme southern portion of South America. It is a cold water province for molluscs, where most shell species are of dull coloration.

We boarded our ship, *The Explorer*, which was to take us to Antarctica, 700 miles to the south. The Antarctic convergence, where the ocean temperature drops from 50° to 34° in about ten miles, is only 250-300 miles south of the Falklands.

My wife and I shelled the beaches in several places in the Falklands, including the Port Stanley area, the capital. As expected, most of the beaches and rocky shores yielded dull brown, white or black shells. Limpets were plentiful but dull and without design or color (Fig. 1).

There was one major exception, which is the subject of this article. We took a zodiac from *The Explorer* to a remote beach named Volunteer Point about 30 miles north of Port Stanley to visit penguin colonies. It was a bleak scene, with no trees or shrubs, just tundra and tussock grass. Temperatures were in the neighborhood of 50°Fahrenheit, typical of summer in the Falklands. The beach we landed at was broad and barren except for penguins. My wife and I were the only ones looking for shells, which were scarce and dull brown. Suddenly, in an area where the beach met the rocky bluff, we began to find some very unusual limpets. They fell into three groups. The first were all keyhole limpets of the genus *Fissurella*. They were remarkable because of their spectacular colors and designs (Fig. 2). All colors of the rainbow were present, some in subtle pastels and others in strong hues. Three species were identified but all were more colorful than those illustrated in the various articles and texts or museums we checked, including the Smithsonian. They were as colorful as, and sometimes more so than, limpets from the tropics.

The second group comprised both keyhole limpets, probably of the genus *Fissurella*, and limpets of the family Patellidae, genera *Patella* and *Nacella*. Despite a review of the literature and visits to major museums, we could not identify these shells. In fact, the genus *Patella* is not supposed to range this far south. The *Fissurella* shells were pure white or cream and white with splashes of red or purple. The *Nacella* and *Patella* shells were cream or honey-colored with interesting patterns or designs (Figs. 3 and 4).

The last group holds just one shell, identified as *Fissurella maxima* (Fig. 5). It is unusual in that its colors are entirely different from those seen in the literature or museums, despite identical morphology. The usual color is reddish brown rays on gray or white. Also the shell was well outside its known range, which is limited to the Peruvian Province from latitude 10° to 36° South. This shell was found in the Atlantic Ocean at latitude 52° South!

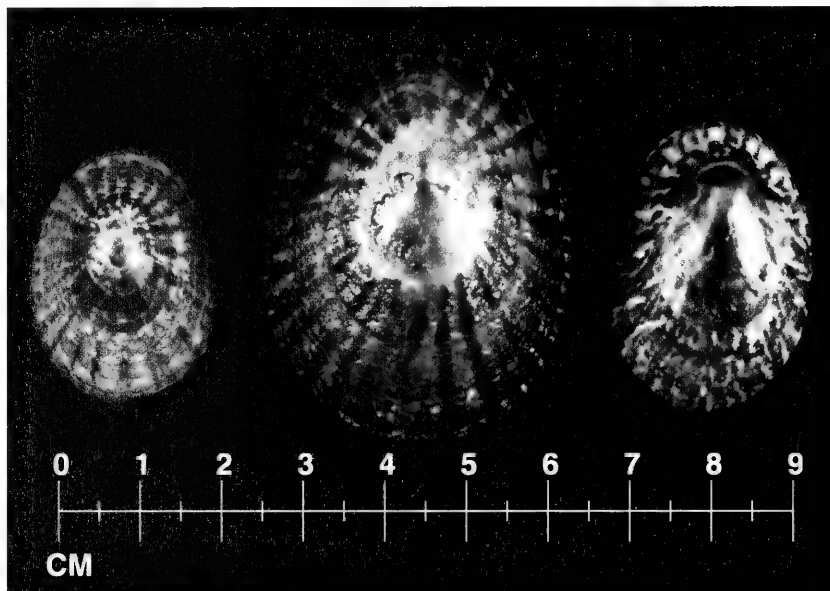


Figure 1. These are true shades of black, brown and white. Left to right: *Nacella fuegiensis* Reeve, 1855; *Nacella (Patinigra) deaurata* (Gmelin, 1791); *Nacella magellanica* (Gmelin, 1791).

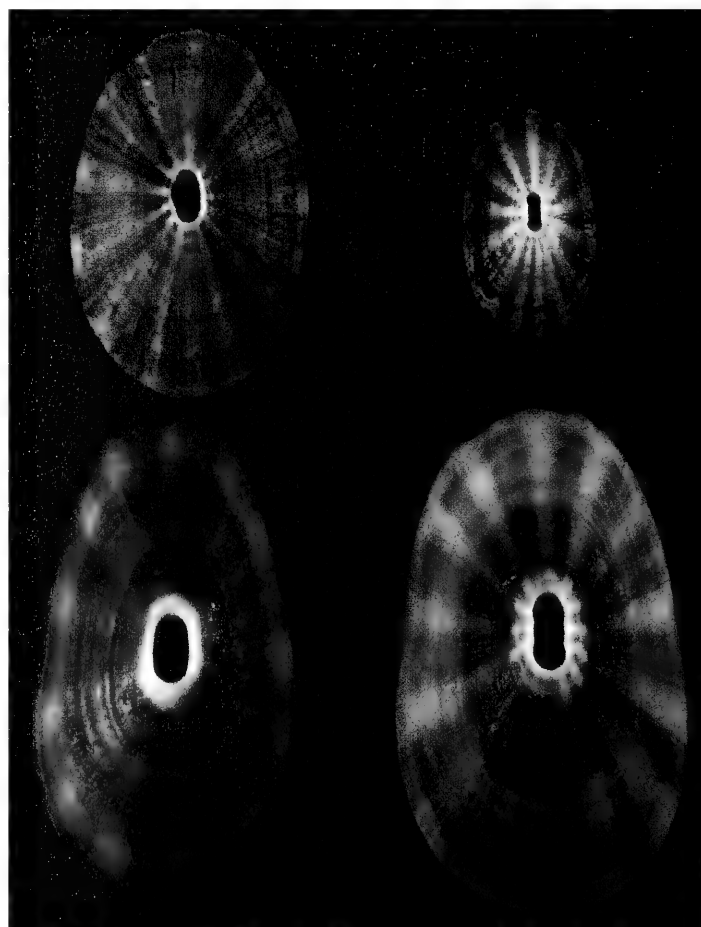


Figure 2. Upper left: *Fissurella radiosa* The actual shell is just as deep a blue, but the yellow is paler here. Upper right: *Fissurella picta* (Gmelin, 1791) Lower left and right: *Fissurella oriens* Sowerby, 1835.

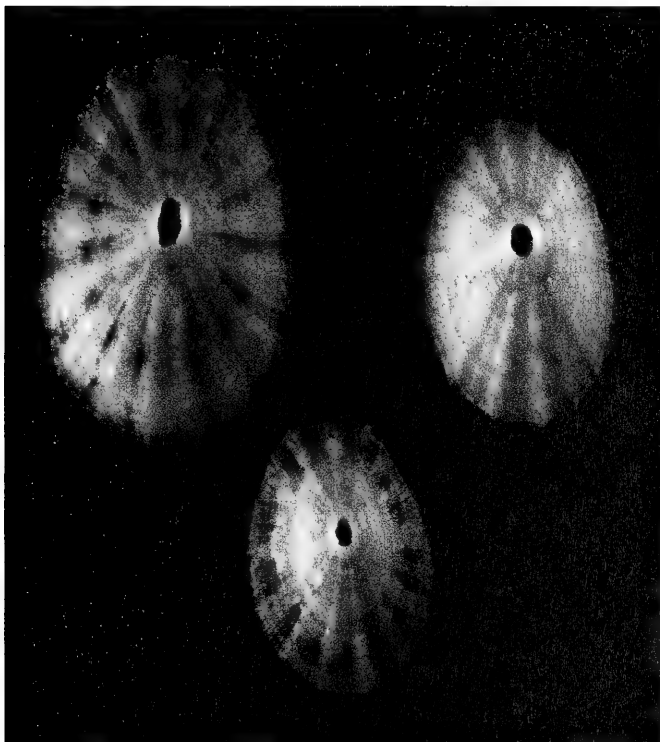


Figure 3. Some *Fissurella* species. The shell on the upper right is porcellaneous, glassy white.

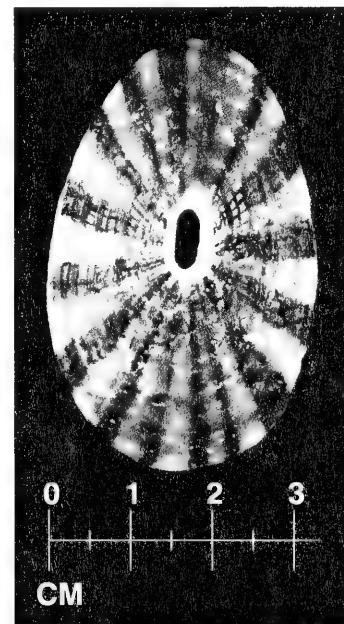
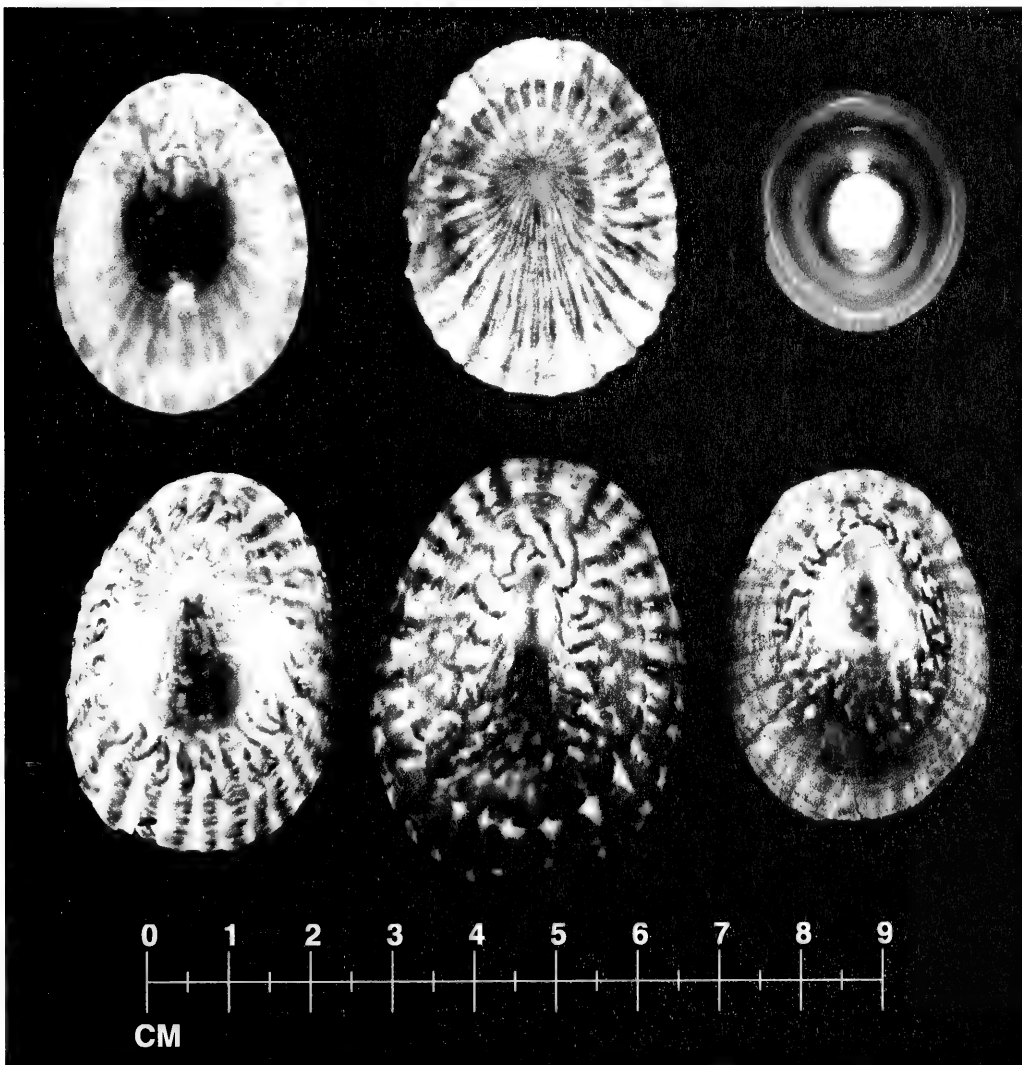


Figure 5. *Fissurella maxima* Sowerby, 1835

Figure 4. Left to right: a) *Nacella* species, unnamed; b) *Patella* species, unnamed; c) not even sure of the genus on this one but it appears to be *Patellidae*, *Cellana* or *Nacella* — it has a high dome. Below: d) 3 specimens of *Nacella* species, unnamed.

I made inquiries of the crew of *The Explorer*. They stated that about ten days earlier there had been a severe storm on the Atlantic. This could explain why the shells were found at the junction of the beach with the rocky bluff, a good 200 yards from the surf. Most of the shells were in fine to gem condition.

Has anyone else seen the unidentified shells? Could the colorful shells represent relic colonies from the Pliocene? The Falklands, because of their location well out in the Atlantic, were never glaciated in the Pleistocene. That, and the fact that the continental shelf is only ten miles away from the beach, with depths exceeding 600 feet at that distance (Even during the Ice Ages, when the oceans dropped 250 feet, water was available for these molluscs) could explain the possibility that these shells, with their warm tropical colors and unnamed species, are survivors from the much warmer Pliocene period 1.5 to 5 million years ago, when conditions were subtropical, even in the Falklands.

KNOW YOUR CONES

by Betty Hunter

Betty Hunter strikes again! The fearless retired Latin teacher once more enters the frightening jungle of Latin shell names to bring back another brain cruncher of a quiz, this one on the Conidae. Before you test your wits against the great _____ (What name suggests a cowrie form from South Africa?) you'd better check your score from her March issue "Know your Cowries" quiz. We hear that Harry Lee only scored a 94% on it, and dropped to a 92% on the cones. The answers are below, and there'll be no arguing with the teacher! (Next issue: Know Your Muricidae)

1. What cone name suggests a royal crown?
2. What cone name suggests a burial at sea?
3. What cone might wish to purchase Cloth World or Fabrics Unlimited?
4. What cone names the Roman god of the sea?
5. What cone name suggests a group of land flowers as well as a sea creature resembling a flower?
6. What cone suggests a quadrupedal, carnivorous scavenger?
7. What cone, named for a taxonomist, sounds like a little girl's favorite toy?
8. What cone was indirectly named for a fuzzy, friendly creature from Star Trek?
9. What cone suggests a 20th century U.S. President?
10. What cone is named for a great hunter of classical mythology? He became a constellation?
11. What cone name bears the name of a flower extensively grown in the Netherlands?
12. What cone suggests the first man to circumnavigate the globe?
13. What cone bears the name of the Roman god of doorways and beginnings? He is regularly portrayed as having two heads, one looking backward, the other looking forward?
14. What cone might have aspired to be a ?
15. What cone suggests an ancient swordsman fighting in the Roman Colosseum?
16. What cone suggests a soothsayer or diviner?
17. What cone suggests the white fur often adorning royal clothing?
18. What cone suggests one of the wise men attending the birth of Christ?
19. What junior synonym for the largest species of the living Conidae represents the mythological titan who stole fire from Zeus and gave it to mankind?
20. What cone suggests the picture writing of the ancient Egyptian priesthood?
21. What cone suggests an end or a boundary?
22. What cone's name suggests that it is active at night?
23. What cone suggests a Greek goddess of the moon?
24. What cone names a handsome youth loved by Aphrodite?
25. What cone contains the name of a fauvist painter who worked in Tahiti?

Answers to March's quiz:

1. *Cypraea edentula*, *C. teuleri* 2. *C. friendii*
 3. *C. pulicaria* 4. *C. aurantium* 5. *C. angelicae*
 6. *C. hesitata* 7. *C. reevei* 8. *C. cervus*,
C. camelopardalis, *C. tigris*, *C. pantherina*, *C. lynx*,
C. zebra, *C. ocellata*, *C. rhinoceros*, *C. cervinetta*
 9. *C. clandestina* 10. *C. argus* 11. *C. depressa*
 12. *C. eludens* 13. *C. aequinoctialis* 14. *C. isabella*
 15. *C. hungerfordi* 16. *C. summersi* 17. *C. coxi* (*cox* is a
 variant of *coxswain*) 18. *C. alveolus* 19. *C. annulus*
 20. *C. marginalis* 21. *C. marginata* 22. *C. staphylaea*
 23. *C. ovum* 24. *C. porteri* 25. *C. felina*

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NOTICE TO CLUBS:

COA's new World Wide Web site, "The Conchologist's Network" contains a section for listing contact names and addresses for shell clubs and organizations, affiliated with COA or not. We have done this for the benefit of shell clubs worldwide and for the convenience of collectors seeking a shell club. Results have already proven it effective in getting new club members.

All of the U.S. Clubs are listed (we think!) but many of them have no contact person or address. If you would like to have your group contact listed here, please send all relevant information (approved by your group, of course) to American Conchologist, 1222 Holsworth Lane, Louisville, KY 40222-6616, fax it to her at 502-426-4336, or email to AmConch@ix.netcom.com. The more contact options, the more effective the listing, because many

people want immediate contact, once they realize there is a group in their area. We suggest you arrange to check your entry for correct information once it is up on The Conch-Net.

Contact Name: (if you wish it listed)

Contact address:

Contact email address: (if available)

Contact fax number: (if available)

Contact phone number: (if you wish it listed)

EDITORIAL

A not-so-recent article in that constant source of timely and topical articles, *The Wall Street Journal* (10/4/95), contained an article of peripheral interest to all shell collectors concerned about the environmental question, "conservation" legislation, and the future of the hobby. The article was entitled, "Easy Being Green: Pick a Name Bearing The Sounds of Nature" and subtitled, by way of explanation, "Anti-Environmental Groups Choose Pleasant Monikers; The Forest's Many Friends." It went on to say that many special interest groups like hunters, off-road vehicle enthusiasts and land developers are choosing names like "The Abundant Wildlife Society," "Sahara Club," and "The National Wetlands Coalition."

Such emotion-twanging PR ploys, historically a part of the environmentalist modus operandi, are becoming more common among the opposition, fighting fire with fire by adopting such ambiguous appellations. It seems we must delve past face value even on this matter; "Conchologists of America" could sound equivocal to some interests, who may equate "students" of with "fishers" of, or even "pillagers" of.

However, my interest was especially drawn to a statement by Henry Lamb, executive vice president of the Environmental Conservation Organization (pro land developers) who accuses the environmentalists of being the ones who are playing with words: "They're the ones deliberately trying to co-opt words like 'conservation,' when what they really are after is 'preservation,'" and that conservationists "believe in responsible stewardship and wise use of resources," while preservationists "want to lock everything away."

This argument set me thinking: how is it that we shell collectors, long proud of being strong conservationists and

lovers of the environment and nature, are suddenly being shoved out from under the blanket. The above distinction makes it clearer in my mind. The word "conservation" derives from the transitive verb "to conserve." It has two meanings, according to the American Heritage Dictionary, the first of which is applicable in our sphere: "1. a. to protect from loss or depletion: conserved his supply of Cuban cigars b) To use carefully, avoiding waste: tried to conserve fuel." Note the implication of use applied throughout this first connotation of "conserve." (The second meaning is: "To preserve (fruits) with sugar.")

Politics indeed make strange bedfellows. And so, it seems, does environmental concern. (To think of shell collectors finding something in common with hunters and despoilers of wetlands! What next? The Army Corps of Engineers? They do run a nice campground!) But these days it seems we must adopt, wholesale, the advocacy of those preservationists who wish to deny public access to the natural world; that will assure us membership in the Good Guys Club. Or we must reason it out for ourselves, perhaps come to terms with the desirability of preserving personal freedoms, and join the ranks of those who seek more people-friendly means of assuring clean water, healthy air, and protection of the earth's species. But beware! Making the latter choice puts us at risk for wearing black hats and being labelled special-interest advocates who subscribe to the policy of "après moi, le déluge." Are we willing to be lumped with the NRA and developers of the rain forests? Indeed, must we be? I wish I knew. It seems from where I sit today that the preservationists ultimately will make of the earth a giant museum with "don't touch" signs posted on all the exhibits. Is there no middle ground?



DIAMONDS IN THE SUN — COA 1996 JULY 15-19, 1996 Tradewinds Resort, St. Pete Beach, Florida



By now, all should have their registration forms in hand. Get them filled out quickly in order to insure your space on Field Trips and for the Banquet — and for dealers, your space at the Bourse. (Please remember that all dealers must be registered for the Convention as well as for the Bourse, and must have been COA members in good standing at least six months prior to the convention.)

All programs are currently in place and our offerings certainly will be varied. Programs include all phases of shell collecting, including land shells and freshwater shells from all over the world. We will travel from Antarctica to the Caribbean, and from the Atlantic to the Pacific.

To whet your appetite for the program lineup, we'll mention a few of them: Charlotte Lloyd on "Caribbean Shells Alive"; Jose Leal (new Scientific Director of the Bailey Matthews Shell Museum — meet Dr. Leal elsewhere in this issue) on "Deepest Atlantic Mollusks"; Alice Monroe on "Lines, Tents and Dots: the Genesis of Shell Patterns"; "Fossil Collecting on an Island in the Antarctic" by William Zinsmeister of Purdue University; and other equally stimulating speakers and topics.

The Seminar that is planned for Wednesday evening will give attendees a chance to air their views on "The Future of Shell Collecting." The panel will include people involved in curating collections and in legislating the rules, as well as shellers involved in collecting shells. Time should be sufficient for everyone to enter into the discussion following the panel presentation.

That same evening, those involved in Public Relations (fancy word for Publicity) for their local clubs can enjoy hearing from a professional some of her secrets, and from various shell clubs their success stories. Handouts should be available for you to take, and hopefully find useful.

If you have not sent in your hotel reservations, please note a change of number for the fax. For USA and Canadian visitors, you may call 1-800-808-9833 to make your room reservation Overseas visitors may call 813-367-6461 or you may fax your reservation (be sure to include all information, including the fact that the reservation is for the COA Convention) to 813-562-1222.

The Committee is hard at work to make this the biggest and the best convention for COA and we hope to see all of you in July.

Betty Lipe, Convention Chair

A PRACTICAL DEMONSTRATION OF THE POWER OF CONCH-L Or Everyman's Pinna

Sometime in April, a subscriber to Conch-L sent an email to the list asking for information on Pen shells. It seems he had found an *Atrina serrata* and wanted to know more. Within a few days, the following information flowed out onto Conch-L. From Sylvia Edwards:

I have a story to share about Pen Shells. We used to shell frequently at Port St. Joe, Florida (east of Panama City in the Panhandle). We brought home a bucket of shells one day and, tired after the long trip, we decided to wait until morning to clean the empty ones. There was no water in the bucket except what had dripped from the shells.

When we got to the pen shell, the "empty" shell had a fish in it. It was still alive and we put it in our salt water aquarium. We kept it for a couple of years and it grew and grew and grew. We never identified it, beyond knowing it was some kind of rock fish. The ugliest thing you ever saw. It did not bother anything else in the aquarium. Except us!

The day it bit my husband for the third time while he was trying to clean the aquarium, he carried it out and put it into the Gulf where, we now joke, it is surely eating all those 6 to 8 foot sharks we used to see.

My husband and I collected all three species of U.S. pen shells in the Port St. Joe area. Our largest intact specimens in our present collection, all collected after they were empty are:

Saw Toothed Pen: *Atrina serrata* - 3 3/4". (We broke our largest and discarded it.)

Rigid Pen (*Atrina rigida*) 10 3/4"

Amber Pen (*Pinna carnea*) 7 1/4" - we have numerous *P. carnea*, in various sizes, all from the Port St. Joe area, contrary to what the books tell you.

We never found any pens on the open beach, only in bays.

Ed: Found dead *Pinna carnea* and *Atrina serrata*, both fairly abundant, on the open beach in March on St. George Island just east of St. Joe. These guys don't know the rules, do they? The following might explain it:

From Dr. Jose Leal, Scientific Director, Bailey-Matthews Shell Museum:

Greetings from Sanibel! *Atrina rigida* and *Atrina serrata* are usually associated with soft sediments and seagrass beds. They wash ashore abundantly on the open (Gulf) side of Sanibel and Captiva. About the small rock fish found inside a pen shell: the use of pen shells as shelters by fish and invertebrates (what fish species are more likely to be found in empty *A. rigida* shells, etc.) was the subject of a doctoral work recently defended by Dr. Mark Kuhlmann at the Florida State University in Tallahassee. I understand his findings will be published in an upcoming number of the *Bulletin of Marine Science* (Miami).

And you say you still want to know more?

From Stewart Jones, a new COA member, who collects legends about shells instead of the shells themselves:

(As you will see, my interest lies in human interest stories about seashells — not so much their description or classification. . . nor do I have an interest in collecting them. So if you learn anything unusual about pen shells' history or uses or influence on mankind, I'd certainly like to hear from you.)

Pen Shells

The mussel spins a strong cable known as a byssus. (Byssus: a glandular molluscan secretion that quickly hardens into a cable) Many shells other than mussels spin these tough strands which serve as anchors: scallops, oysters, and pinnas or Spanish Oysters as they are called in Bermuda and the West Indies.

One pen common in the Mediterranean. Pen shells (Fan or Wing shells) - bivalve genus *Pinna*. Source of a rare golden silk. Byssus filaments anchor shell to a sandy bottom. *Pinna nobilis* produces a golden byssus which is gathered and spun into cloth for veils, shawls, gloves . . . finer than the finest silk, so delicate that a pair of gloves may be placed in a walnut shell.

From: *Strange Seashells and their Stories* by A. Hyatt Verrill, p.p. 83-85

Byssus threads are fine, strong, deep bronze gold. Pound of byssus yields 3 oz of high grade thread. Queen Victoria is said to have worn a pair of sea silk stockings made in Taranto, Italy. Some historians have suggested that the Golden Fleece sought by the legendary Greek Jason was a piece of cloth made from pen silk. Used by Sicilians as late as the 19th C. for gloves, stockings, caps, collars.

From *Kingdom of the Seashell* by R. Tucker Abbott, P. 184

(There's lots more here about the Pens — Ed)

In Rome, the Noble Pen shell was known as "the silkworm of the sea." Its finespun byssus threads. . . were woven into a gossamer, golden bronze cloth so fine that a lady's dress of this material could be drawn through a finger ring. . . *Legends of the Shells* by Stewart Jones

. . . Until recently the inhabitants of Sicily and Calabria were still weaving this material. Mixing it with about 1/3 of real silk, they knitted it into gloves, capes and even garments of larger size.

From *Shells* by Roderick Cameron

Ancient writing tells us they were a favorite fare of early Greek and Roman gourmets . . . begin to appear in worthwhile numbers on the shores below Cape Hatteras, they live in the most prodigious numbers on the Gulf Coast of Florida. *Atrina rigida*, stiff pen shell, most likely of the three to be encountered. *Atrina serrata*, saw toothed pen shell, Hatteras to the Keys, then along the Gulf to Texas. *Pinna carnea*, amber pen shell, only in S.E. Florida (Ha! Ed. and Sylvia Ed.)

From *The Free Food Seafood Book* by Peggy Ann Hardigree

Which only serves to remind me that long ago Mathilde Duffy, one of my favorite artists, and a habitual collector of oddities and esoterica, sent me a copy of a chapter from a little book published in London in 1906, *The Greedy Book*, by Frank Schloesser. The chapter was on "Snails and Waiters." But the table of contents indicated there was another chapter on Oysters. Perhaps I should put Stewart Jones in touch with Mathilde. And perhaps there's more on the Pen shell in that clever little epicurean volume.

And which also reminds me that I wanted to add a bit of jargon for those of you who are becoming interested in the Internet as a way to further your collecting activities and interests: the above sequence is called a "thread." Might we substitute the term "byssus" instead?

The Proliferation of Species

And another thread on Conch-L has to do with the proliferation of new species.

Art Weil, COA member from Cincinnati writes:

Let me throw out a suggestion no one will like: There seems to be a plague of descriptions of "New" shells that later turn out to be synonyms of existing named shells. In the family Epitoniidae, (my field) *E. lamellosum* takes the cake with, according to Norm Paschall, about 20 synonyms. What I suggest is the creation of "Tentative Descriptions." That way, one could describe his "new" shell and throw it out to be critiqued. If, after a reasonable time (say 20 years) no one has come up with an existing mollusk of the same description, the tentative description could be accepted. The nice part is that when the existing name and description surfaced, the "tentative" namer could just say, "Oops! My bad call." and go back to tentatively naming something else.

It does seem to me that the WWW and E-mail revolution will make exchanges of information a lot faster than in the past. Now y'all tell me why this is a lousy idea.

Barry Roth at Berkeley responds:

What Art proposes is actually a fairly good description of what happens now. The publication of a new species is actually a hypothesis (that is, a suggestion of how things might be, which can be either supported or disproved by further information or analysis) that such a species exists and is different from all other named species.

As soon as it is published, the new species is subject to review and evaluation by the biological community, and with the passage of time the name (and the hypothesis) is either accepted or rejected. For a species in an obscure group, of course, it may take more than 20 years for anyone to critique it.

Special "tentative" descriptions such as Art suggests would still need to be available for use in the literature and in commerce. What would keep systematists, collectors, and dealers who accepted the names as valid from treating them just like any other species?

The subject of some sort of body or committee that passes on new names and makes them official comes up from time to time, e.g. on MOLLUSCA or TAXACOM, and it never gets very far — in my opinion because the description of the natural world (which, after all, is what taxonomy is all about) has to be a dynamic, self-correcting process, not something to be legislated from on high.

And another response from Terry Arnold says he concurs with Barry Roth's response and adds:

In my opinion this proposal is worse than what we already have. The scientific journals that are generally accepted as "respectable" venues for publication of new species use a peer review process that has proven an effective filter over the decades. As part of this peer review process, the reviewers expect the author to have done his homework by carefully reviewing the literature. In the event that this has not been done, they can (and do) request that the author do this homework before the paper containing the new species can be accepted. In the event that the author is unwilling to do the

necessary homework then the paper is rejected as not meeting the required standard of scholarship. Your proposal for "Tentative Descriptions" just muddies the issue.

If the author of a new species has sufficient evidence to erect a new species then this evidence should be able to withstand the peer review process. In many cases the "long synonymies" are the result of new understanding of evolutionary relationships. In other cases they are the result of "lumping" in an attempt to rectify possibly overzealous "splitting" or a general taxonomic "housecleaning." Frequently such a lumping is responded to by another worker who uses a different organization that makes more sense than either the plethora of species or the single lumped species. This is grist of the taxonomic mill.

To which Emilio Jorge Power writes:

It seems that the description discussion is never ending and is on one of its cyclic peaks. Peer review prior to publishing is fine but it seems that it is not accomplished by very "Professional" peers or not accomplished at all. Witness the proliferation of synonyms, mentioned by Art W., that could easily be avoided. I wonder who peer-reviewed *Cypraea gondwanalandensis*? Not because of the cumbersome name but because of the obvious synonymy!

Then Barry replies:

The workers who review manuscripts for The Veliger — voluntarily, independently, and as a contribution in service to the malacological community — are very professional indeed. A list of their names appears in issue number 4 of every volume.

And Terry responds:

The original description of this species appears in the 1970 book *The Living Cowries* by Pat Burgess. The peer review process is often not observed for books. It all depends on the publisher's policies. The discussion associated with this description is clear in that it is distinguishing this new species from *Cypraea fuscorubra* and also that he considered *C. similis* as unavailable. This latter action is legal under the International Code of Zoological Nomenclature (ICZN) if one considers all cowries as belonging to a single genus. If one takes the more modern position that there are several genera in the family Cypraeidae then *C. similis* is the senior synonym of *C. gonwanalandensis*. All of this is "legal" by the ICZN. It is interesting to note that Burgess placed *C. gonwanalandensis* in synonymy with *C. fuscorubra* in his 1985 book *Cowries of the World*. This action is also very legal, especially since he stated that the new position was based on additional specimens.

There have been other taxonomic "acts" within the Cypraeidae that were solely based on the single genus concept. The good news is that with the multiple genus view becoming dominant the original names become senior synonyms and the newer names become junior synonyms.

In Memoriam

Hessie Kemper
1916-1996

George Herman

CONCHATENATIONS

by Gary Rosenberg

Lumping and splitting

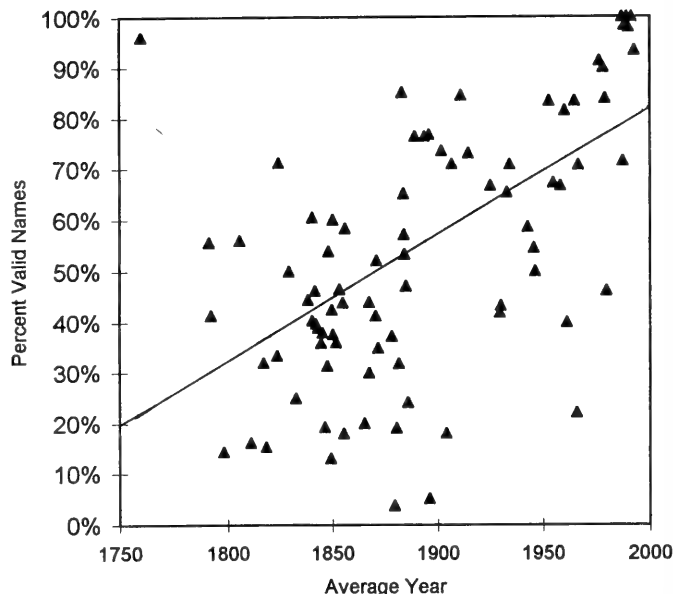
Authors are often characterized as lumpers or splitters. From one perspective, splitters recognize more species than really exist, and lumpers go around fixing the resulting damage. From another perspective, lumpers are indiscriminating bunglers incapable of appreciating the subtleties of nature. But it's not so simple. Some authors have introduced many names now sunken in synonymy yet have unjustly synonymized many names of previous workers. Others rarely name species and rarely synonymize them. Such types err respectively by jumping to or shying from conclusions, but they are neither splitters nor lumpers.

As scientific methods progress, one would expect the track records of authors to get better. I tried to evaluate this by taking those authors who have introduced 20 or more names for Western Atlantic gastropod species and determining the percentage of their names currently considered valid*. The resulting graph shows that track records have been steadily improving, from 30% accuracy around 1800, to almost 80% accuracy today. The overall average is about 52%: 8402 names, 4323 of them valid. (The points are plotted at the average of the years in which each author's species were named.) In the upper left hand corner is Linnaeus, at 96%. In the upper right are Dell, Ponder, and Warén at 100%, and Quinn and Jong & Coomans at 98%. Bottom of the barrel are Locard (4%) and Verkrüzen (5%).

By modern standards, Linnaeus was a lumper, many of his species being composite by modern standards; his high average merely reflects the advantage of going first. The averages for Dell, Ponder, Warén and Quinn will probably hold up since they publish thoroughly researched monographs. These workers are neither splitters nor lumpers. Jong & Coomans' work hasn't stood the test of time. Their book was published in 1988, and gave rather brief descriptions of a number of micromollusks from an understudied fauna. Whether they were splitters cannot yet be judged. Locard and Verkrüzen were clearly splitters, although many of the names they introduced were at the varietal level.

Who were the farthest from the norms of their day? The first American conchologist, Thomas Say (71%) did remarkably well without access to most of the European literature. Nowell-Usticke (22%) did poorly considering that he had access to major East coast collections and libraries. What about some of our favorite authors? Abbott 67%, C. B. Adams 54%, Dall 73%, E. H. Vokes 84%, Gmelin 55%, Lamarck 32%, Melvill 84%, Petuch 71%, Pilsbry 43%, Reeve 38%, Rehder 50%, Röding 14%, Watson 85%, d'Orbigny 61%. These numbers will surely change, especially as revisions of small, deep-sea, and recently named species proceed.

Assuming that species really do exist in nature, which is the greater sin, recognizing too many of them or too few? In practical terms, the difference between lumpers and splitters is that you can be relatively sure that you know what splitters are talking about, even if you don't agree with their classifications. Splitters are precise, even if they are not accurate. A lumper is neither precise nor accurate. It's much easier to recombine something that has been oversplit, than to



tease apart what has been erroneously lumped together. This becomes apparent when you try to make a computerized database of names. It's easy to sum the geographic range of a species over all of its synonyms. It's hard to determine the geographic range of a species if several other species have been confused with it. Therefore, I encourage authors to include a statement such as "all the specimens I examined from Isla Utopia were variety x, which I considered to be a synonym of y." If, in retrospect, they were wrong in synonymizing the variety, their error could be easily corrected. (Even more desirable is deposition of specimens in public museums, to allow later authors to verify identifications.)

As computerized databases of names (and images of types) of mollusks are developed, knowing what has previously been discovered will become easier. And with the techniques available to modern biology, there is not really much excuse to be either a lumper or a splitter. Multivariate statistical analysis of shell morphology, anatomical studies and molecular genetics can solve most species level questions rigorously. Many questions argued unproductively for years can be solved in the laboratory in less than two weeks, given live collected specimens or frozen tissue to work with.

The technique is relatively simple: allozyme electrophoresis, which involves separating common metabolic enzymes by their electric charge. (There are similar DNA based techniques). If two taxa live together and do not interbreed, their enzymes will usually show fixed differences. A single fixed difference is sufficient to prove that they are not the same species. This can be a particularly effective technique for showing genetic similarity in species where the morphology of the individual can change in response to the environment. A good example of this kind of change is *Turbo cornutus* from Japan. Specimens living on wave-pounded coasts develop strong spines; specimens from sheltered areas are smooth. The animal apparently takes its cue from the

*Rosenberg, G. 1995. Malacolog Version 2.0. A database of Western Atlantic gastropods. Accessed via Internet, URL [gopher://erato.acnatsci.org](http://erato.acnatsci.org). Currently contains more than 9800 records for Western Atlantic gastropod species and synonyms.

seaweed rather than the surf; different species of seaweed grow on the rough and sheltered coasts. In the laboratory, one can manipulate spine development depending on the type of seaweed the animal is fed.

Proving that two species that live together are the same is harder than proving that they are different — maybe the differences haven't been found yet. If two taxa live apart, proving that they are different species is more complicated — maybe there is a gradient of intermediates in the geographic area between them — although sometimes the genetic difference is great enough to be compelling evidence. But there are many cases where taxa live side-by-side, and no one has ever done the work to answer the question. Are *Cassid madagascarensis* and *Cassid spinella* one species or two? How about *Phalium granulosum* and *Phalium cicatricosum*? The problem of course is expense: collecting the material and paying for supplies and salaries for two weeks in the lab can easily total several thousand dollars. Anyone want to fund a study of his favorite species?

Novice's Notebook:

HOW TO MAKE AN EXHIBIT EASILY

by Peggy Williams

Exhibiting in a shell show is not really hard. You might take, for instance, all the shells you found on one trip and arrange them in a case to show what can be found in one day in one location.

First, clean the shells nicely. You can put some baby or mineral oil (cut with lighter fluid to make it less oily) on them to make them especially shiny. (*Hint*: put the oil only on the side you want to show. Oil might stain your background and ruin your display.)

Identify your shells. Get the scientific name, author and date of naming for each one. Club "experts" are glad to help with this and can probably even tell you over the phone what you have found! The public likes to see common names on the local shells, too, so I put both on the labels.

Get a display box with glass cover and tentatively arrange your shells in a manner that pleases you. Choose a background that looks nice with the shells. The bottoms of my cases are covered with blue formica, but sometimes I get black or colored velveteen or other appropriate fabric and cover a piece of cardboard just the right size for the bottom of the case. Or you can use picture-framing mat board or any colored paper. Remember, the oil you put on your shells may stain the background — don't put them on it until you're sure that's where you want them!

Make labels for the shells. This may be the hardest part if you don't have a typewriter or computer, but you can use computers at Office Depot-type stores. You can also print nice labels by hand. Adhesive labels often curl at the edges and don't stick to cloth; better to use index cards or plain paper. Many exhibitors glue plain or colored paper to colored mat board.

The labels should have, as a minimum, the name (in italics or underlined), author and date of naming. You can add common names; if you found them all in one place at one

1992-1994 INDEX SUPPLEMENT READY

Publications Director Betty Lipe has announced that the 1992-1994 Index Supplement to the American Conchologist is completed and ready for sale now. Please send your request, along with a check for \$2.50 to cover copying and mailing costs to Betty at 440 75th Avenue, St. Petersburg Beach, FL 33706. The price has gone up to \$2.50, but Betty assures us that this will be the last price increase for the next several updates. She adds that the 1992-1995 Supplement should be ready sometime in September. If you want a copy of the original 20-year Index through 1991, send your order with \$4.00 to Hank Foglino, 4 Trent Court, Smithtown, NY 11787. Back issues are also available from Hank at \$3.00 for issues prior to 1985 and \$5.00 after that.

time, your sign for the exhibit can say so; otherwise, indicate on each label where and when the shell was found, and habitat, tidal conditions, depth, etc., if you know them and have room. If your exhibit includes shells you did not find yourself, you can indicate ones you did find by sticking or drawing a red star on their labels. If all the shells are self-collected, your sign can say so, or you can enter in a self-collected category. *Shells found at a scallop dump are not usually considered self-collected at Florida shell shows.*

Sometimes I use Plasti-tac (found in office supply stores) to stick the shells and labels to my formica backing. But if your shells are rare or precious, you will not want to risk the stuff sticking permanently to the shell. In that case you will want to put each shell in place when you set up your exhibit. Some exhibitors carry the shells to the show inside the case, each in its own box or bag, then take them out and arrange them at set-up.

Make a sign to indicate the theme of your exhibit. This can be placed in the case or on an easel or bookend beside or behind the case. Use another piece of mat board, foam board or any stiff material that will stand without sagging. The arrangement should be attractive from the back so it won't detract from the exhibit behind yours. You can get stick-on letters at an office supply store, or print on plain paper and glue it to the backing. On your sign put your theme ("A Day's Shelling in Sarasota Bay"). If you found all the shells yourself, you may add that in smaller letters.

Never put your name or a picture of yourself in the exhibit, as this might give clues to the judges. If you are in a picture, put a piece of paper over it during the judging. If you are a child, you should indicate your age in the exhibit.

You'll find, after your first exhibit, that you look at the show differently; you evaluate the exhibits, read everything, look for new ideas, and think up better ways to do it next year. And next year's exhibit is better, and better, and before you know it, you're an "expert" winning trophies!

BOOK REVIEWS

Software for Collectors:

Two Invaluable Programs for the Collector from DeLorme Mapping Software

by G. Thomas Watters

The most valuable part of your collection is the label. It may also be the most neglected and unfinished part. If your collection is to have any scientific value, each specimen needs at least three pieces of information: where it was found, who found it, and when. Way down the list on importance is: what is it? Identifications may change daily, but the collection information does not. Without these data, your shells are just pretty paperweights.

Whether you collect your own specimens, or trade or purchase them, you need to verify the locality record. The rule of thumb is to give enough information that anyone reading the label could find the spot. Don't rely on unwritten notes in your head. It won't do your heirs any good. Granted, unless you collected the shell, the information may be less than informative. "Philippines" and "Florida Keys" are near useless as localities.

Before computers, when trilobites roamed the seas, one had to rely on paper maps to find a locality. Good ones, such as topographic maps, were costly and covered little ground. Perhaps the best paper maps to come along were those produced by DeLorme. Many states have been completed. The detail of county roads, streams, keys, and other features made these oversize paperbacked atlases an instant success with naturalists. My Ohio copy is now mostly held together by duct tape, with marginal notes scribbled while in a moving car, and covered in coffee stains. Thus, it was with something approaching reverence that I installed DeLorme's two CD-ROM-based mapping programs: *Global Explorer* and *Street Atlas USA*. If you are awed by how much information can be stuffed on a CD, this will be a religious experience.

Global Explorer - This program is a guide to the geography of the Earth. It contains over 120,000 indexed places and features, and information on 20,000 of them. You probably knew that Pointe des Almadies at Dakar was the westernmost point of land in all Africa, but did you know that Hell Ville in Madagascar was named for Admiral de Hell, governor of Reunion? Or that Dzyarzhynskaya is the tallest mountain in Belarussia at 1,135 ft? All of this gazetteer information may be gleaned by clicking on special symbols that appear on the maps. You may turn the symbols off if you don't want the clutter. The maps may be zoomed in or out with buttons, or you can simply click and drag a square around whatever you wish to zoom in on. At maximum resolution, the map is about nine miles wide - anywhere on Earth. Selected major cities zoom into a map width of about two miles and contain many street names. Additional buttons give air route mileages between two points. While you cannot print out directly from *Global Explorer*, you can copy to the Windows Clipboard and paste it into another application.

In addition to cities, towns, and roads, the maps show rivers, mountains, reefs, and other natural features. You may find places and things by typing their names. This is like a dictionary, in that you must spell a word correctly for it to be found. You can narrow your search by selecting a particular country and/or category of places. For instance, you could look at just the lakes from Taiwan (four are listed). It is

important to remember that there are many more features not on the list that appear on the map. So if you don't find it in the index, it still pays to go searching for it. Why something appears in the index, and something else does not, is a mystery. The minuscule island of Nosy Andriamitaroka is in the index, but the more substantial Malaita in the Solomons is not. Many rivers and streams are indicated, but most are not identified.

So how does *Global Explorer* fare as a collections locality check? I randomly selected 120 locales from my collection. I was able to find 95 of them (79%). Others may be in there, but may have been missed because of spelling errors. In summary, this program enables you to correct spellings, supply additional information, and create printed maps of a site. I find it indispensable in checking locality records. Now you'll know where legendary collecting spots like Goree, Tranquebar, and Amboine are located. It is entertaining, informative, and well-crafted — and well worth your money.

Global Explorer runs within Windows 3.1 on a 386 or better PC with a CD-ROM drive and VGA. The program uses 3 Mb of disc space. List price about \$59.

Street Atlas USA 3.0 for Windows - Type your street address, and it will show your street, which side of the street you live on, street numbers on the street behind you, the name of that creek in your back yard, your longitude and latitude... everything but you looking out the window. Don't know the address? You can find an area based on zip code or area code and exchange. You can look up any of one million places, or 25 million street segments. They're all here: Monkey's Eyebrow, KY; Bugtussle, TN; and the always popular Intercourse, PA. You can print custom maps directly from the program using many annotating options or paste a map into another application. You can annotate directly on the map and save it to be displayed whenever you view that area. This CD-ROM mapping program is nothing short of awesome.

As the name states, this is meant to be a street atlas. However, it also contains nearly every river, stream, mountain, key, road, and pothole in the USA. At maximum resolution, the map is about 1/3 of a mile in width. Unfortunately, unlike *Global Explorer*, you cannot search for these features - only places and addresses. Thus, you must give it a place to go to to find a feature, the Green River at Munfordville for instance. Another disadvantage is that there are no county names on the map, although at high resolution there are county lines shown. This seems a major exclusion for a program that has everything else, and is its major drawback. But a great plus is the ability to get longitude and latitude from the cursor location. Wherever you point, there are the coordinates in the lower left. Unlike *Global Explorer*, *Street Atlas* is not a gazetteer - it does not supply information about any of the places.

To test it, I randomly pulled 130 USA localities from my collection. It found an impressive 115 of them (88%). This program's greatest use is to the freshwater and terrestrial

collector, but marine shellers will find it a very useful tool as well. With the excellent plotting functions, you could theoretically produce a map of every locale for every shell in your collection.

Street Atlas USA runs within Windows 3.1, NT, or 95 on a 386/33 or better PC with a CD-ROM drive and VGA. The program uses 4 Mb of disc space. List price about \$79, but can be found cheaper. There also is a Mac version.

If you want more information, demos, and on-line ordering, check out DeLorme's impressive Web site at <http://www.delorme.com>. DeLorme's address is Lower Main St., PO Box 298, Freeport, ME 04032, 207-865-4171. Look 'em up on *Street Atlas USA*. They're next to I-95 and the Maine Central Railroad line, according to the program.



Seashells of Central New South Wales, A Survey of the Shelled Marine Molluscs of the Sydney Metropolitan Area and Adjacent Coasts by Patty Jansen. Privately published. Townsville, Australia, 1995. Soft cover, stitched binding, 129 pages 21 X 29.5cm (8 3/8" X 11 7/8") A\$40.00 +A\$7.00 Surface mail, A\$12 economy air.

What's a nice agronomy PhD from the Netherlands doing in a place like eastern Australia writing a book on the shells of Sydney? (Did I mention she is also the mother of 2 1/2 children, and loves to garden, draw, and make clothes for her children?) She's doing a bang-up job, and making a lot of us awfully glad there's a Patty Jansen. Patty's book, *Seashells of Central New South Wales*, is a gem. Actually it's an industrial diamond, because for all of its attractiveness, it is a much needed working tool for the collector of Australian shells.

A shell collector from childhood with an interest in small shells and micromolluscs, Patty discovered, when she came to New South Wales in 1988, that there was little interest in these small shells among her fellow collectors, because there was no book on the shells of New South Wales. Her own pursuit of their identities took her to scientific publications housed in the library of the Australian Museum; she became a volunteer at the museum, began writing for the *Sydney Sheller*, newsletter of the Conchology Section of the Royal Zoological Society of New South Wales, and one thing led to another. Patty has now written the first book ever on the shells of New South Wales. And her mentor there, Winston Ponder, has done the nicely complimentary foreword to it.

Her aim is "to enable interested people, both amateur collectors and professionals, to easily identify shells found on beaches in central New South Wales." Thus she restricts her material covered (a mere 484 species) to species that can be found on beaches, because they are "readily accessible to everyone." Unlike most books, including Barry Wilson's 2 volume *Australian Marine Shells*, Patty Jansen's book includes a large number of micromolluscs, readily available from shell grit. ("One bag of shell grit can yield more exciting finds than a stroll on the beach at low tide.")

Bivalves are well-represented (40 families), and there are even a few scaphopods and a cephalopod, the little worldwide *Spirula spirula*. Among the 79 families of gastropods represented, the reader will find such groups as the Litiopidae, Eatonellidae, Iravadiidae and Epigridae; her own favorites, the Rissoidae and related families, and the Pyramidellidae are well-covered.

She appends quite a lengthy reference list for the more advanced collector, enabling further work on the taxonomy and ecology of these species. A short but selective glossary is helpful to the beginner. Maps of the area covered and the obligatory charts of shell features increase the book's usefulness. Patty Jansen is a beach collector by preference and even has a few words of advice on the time-honored art of beach collecting.

I've saved the second-best part for last (the best part is that there is such a book). Did you note that little reference I slipped in above, the one about Patty Jansen's fondness for drawing? Well she is also very good at it. She has illustrated every one of the 484 species in the book with one of her own excellent — and very accurate, judging by comparison with both photos and actual specimens in my collection — and charming drawings. Get a copy now, if you have any interest in the shells of Down Under. That A\$40 translates to only about US\$32. Your favorite book dealer will certainly have them for sale, or there will be a few order forms available at the convention.

(Did I forget to mention that Patty now lives in Townsville and is hard at work on a second book, this one on the common shells of the northern Queensland beaches, expected some time before Christmas?) —LS



Flotsam and Jetsam



From the World Wide Web and the Emailbox

What's up on the Internet? *Hawaiian Shell News* and Hawaiian Malacological Society, The Georgia Shell Club, The North Alabama Shell Club, The North Texas Conchological Society and *Spirula/Vita Marina*. The latter has an International Directory of Conchologists and Malacologists where one can register one's own name and interests. In just a few months it has a register of over 120 people. Deborah Wills of North Alabama Shell Club has created a wonderful site called Resources for Conchologists. *Hawaiian Shell News* has a few articles from the publication so you can sample before you buy. And Mollia, a new site for malacologists, now includes Mollusca, the listserver for malacological questions and information, and the Unitas Malacologica Newsletter, as well as other information for malacologists. There's even a site from Australia called Charmaine's Killer Snail Home Page. Guess what family of snails that is? And shell dealer Guido Poppe has created a "homepage" where one can shop for shells via color photos, and even send an email order. It's a big wide, wonderful Web for a sheller, with more going up every day.

The Third Latin American Malacological Congress will be held October 13-17, 1997 in Ensenada, BC, Mexico. We'll hear more later.

GRANT OPPORTUNITIES:

The San Diego Shell Club and the Northern California Malacozoological Club in conjunction with the WSM, are offering a student research grant in malacology to a full-time graduate or undergraduate student whose research, thesis or dissertation is focussed primarily on the systematics, biology, ecology, physiology, biochemistry or paleontology of mollusks. The deadline for applications was May 3, 1996. COA applauds these groups for their support of such research. (Grant announced on Mollusca listserver Feb 22, 1996)

SPEAKING OF WSM:

Perhaps even as you read this, the 1996 Meeting of the Western Society of Malacologists will be in session (June 23-27) at the Handlery Hotel in San Diego. And have a look at some of the fascinating topics that will be available for cowry lovers: A symposium on the Biology and Evolution of Cypraeoidea which will include COA Grant recipient Lindsey T. Groves has an update on "Fossil and Recent Species of Eastern Pacific Cypraeacea (Cypraeidae and Eocypraeinae [Ovulidae]). Terry S. Arnold presents On *Muracypraea* in the Proto-gulf of California: a Review of Prior Reports and a Report of New Discoveries and also *Muracypraea henekeni* (Sowerby, 1850) in the Caribbean and Panama: One Species or Two? Christopher P. Meyer will address the group on Molecular Phylogeny of Living *Cypraea*, while Claus Hedegaard and Christopher Meyer will tackle the very intriguing topic of Schilder Revisited. Wow. All that just in one of the Symposia. Wish I could be there. If you're online, tune in to WSM's new website at <http://www.users.cts.com/crash/t/tarnold/WSMPage.html>

Abalone Information on the Net

There is now a new listserver for those interested in Haliotidae. It is the abalone NETwork at abalone@botzoo.uct.ac.za. It is hoped that the list-server will become a useful tool for all abalone workers to access information and test ideas. . . as well as being a means of meeting others that are working on similar projects, and become a forum for lively and friendly discussion. To subscribe, send a message to the list-server listserv@uct.ac.za and in the body of the message, write SUBSCRIBE ABNET yourname.

VIALS for Specimens

Tom Watters (Aquatic Ecology Laboratory and the Museum of Biological Diversity, Ohio State University) asked for information on purchasing shell vials because his own source was ceasing production. Paul Scott, Santa Barbara Museum of Natural History responded:

Acme Vial & Glass
1601 Commerce Way,
Paso Robles, CA 93446
805/239-9406 or 805/239-2666

Jose Leal of the Sanibel suggested Thomas Scientific for vials (1/800/-345-2100) and the Wright Brothers Paper Box Co., 305/821-5531 (call Julio Fuentes)

AMU's 62nd Annual Meeting June 29-July 3, 1996

At the Field Museum in Chicago, the American Malacological Union will convene, featuring some fascinating symposia and workshops. Freshwater Mollusks will be featured in an examination of their Life history/growth and development, conservation and introduced species, and phylogeny/zoogeography. Organizers: Arthur Bogan, Kevin Cummings and Tom Watters.

Also of great interest is Mollusca and the Internet, organized by David R. Lindberg, list manager of the listserver, mollusca.

Shell Power — Molluscan shells as sources of phylogenetic, ecological and anatomical information, organized by Geerat J. Vermeij, and including invited papers, is another topic that will interest many collectors. If it holds anything like the surprises of his book, *The Natural History of Shells*, it will be fascinating also.

And finally, collectors will be interested to hear the results of the Collection Management Symposium that will be held this month at the AMU Annual Meeting at Chicago's Field Museum. Even though this symposium is directed at museum collection management, some of the findings will have direct relevance for the private collection too. Of primary interest will be identification of and practical solutions for problems associated with 1) physical and chemical processes affecting molluscan specimens (the so-called Byne's Disease among them) and 2) the management of data associated with molluscan collections. There will also be an exhibit of collections supplies sanctioned by the Society for the Preservation of Natural History Collections. Following the workshop, the information will be published in a collection care guidebook for molluscan collections. We hope it will be made available to individuals as well as museums. (December 11, 1995 on Mollusca listserver)



Meet Dr. José Leal New Scientific Director at Bailey-Matthews Shell Museum

Sanibel's Bailey-Matthews Shell Museum has a new scientific director, Dr. Jose Henrique Leal. You're sure to meet him in person soon, for he takes an active interest in COA, and will be attending the convention in St. Pete next month, both as a COA member and as a speaker on his favorite topics, deepwater mollusks.

Born in Rio de Janeiro, Brazil in 1952, José developed an early passion for the sea. He lived between the beach and a coastal lagoon in the then quiet neighborhood of Ipanema, where he spent most of his childhood and early youth in close contact with the ocean. Swimming, snorkeling, spear fishing and, of course, shelling, were among his favorite pastimes.

José started college at Federal University in Rio in 1974, the year of publication of the second edition of Tucker Abbott's *American Seashells*: "That book sent me a message," says José; "it was the watershed separating a young shell collector from a brooding professional malacologist." During his college vacations, José traveled extensively along the Brazilian coast, amassing a large collection of southwestern Atlantic shells, which he later donated to the National Museum in Rio. Graduating with a BS in Marine Biology, he remained for graduate work in Zoology. For his MS thesis, he prepared a detailed taxonomic and morphological study of *Thais* (*Stramonita*) *haemastoma* (Linné, 1767).

While doing his MS work he helped organize the mollusk collection at the National Museum in Rio. He says, "I was bitten by the island bug," because during his last years there he traveled to most of the tropical and subtropical oceanic islands in the South Atlantic, collecting mollusks in anticipation of work on his upcoming doctoral dissertation. In those collecting trips, José sailed on all kinds of boats, from large Navy personnel transport vessels to frail lobster fishing boats, as well as modern oceanographic vessels.

In 1984 he came to the United States where he had been accepted for the graduate program in Biology and Living Resources at the University of Miami's Rosenstiel School of Marine and Atmospheric Science, under the supervision of Donald Moore and the late Gilbert L. Voss. In the next five years, José published about ten papers on western Atlantic mollusks, and worked on his doctoral dissertation on gastropods from oceanic islands off Brazil. In 1987 he returned to Trindade Island with Philippe Bouchet of the Museum National d'Histoire Naturelle in Paris aboard a large French oceanographic vessel. They dredged for mollusks on top of the six seamounts of the Vitória-Trindade Seamount Chain, then spent six months in Paris studying the seamounts' species, (publishing their findings in 1991 in the *Journal of the Marine Biological Association of the United Kingdom*.)

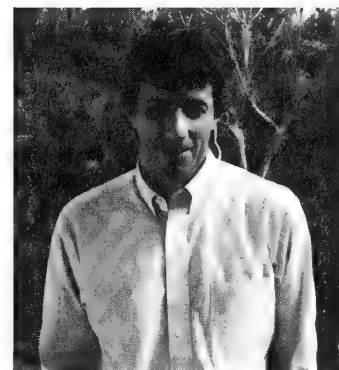
In 1988 José received a Smithsonian Short-term Visiting Award. While there, he visited with mollusk curator and member of his doctoral academic committee, the late Richard S. ("Joe") Houbbrick, and he examined types of western Atlantic gastropods held by that institution.

José defended his doctoral dissertation in June 1990, and in 1991 his findings were published as a book in The Netherlands. After that he was hired as a research associate at the University of Miami's Electron Microscopy Laboratory where he continued his work on Atlantic gastropods.

In 1992 he and his family moved to Washington D.C. where he attended a year-and-a-half appointment as a Smithsonian Postdoctoral Fellow, working at the National Museum of Natural History's Division of Mollusks in association with curator M.G. ("Jerry") Harasewych. There he studied the systematics of a group of deepwater gastropods of the family Volutidae. After his return to the University of Miami in 1994, José began a study of abyssal and hadal limpets.

José does not keep a private shell collection, but has collected on behalf of different museums "from Long Island to Uruguay" in the western Atlantic, the U.S. east coast, and the eastern Atlantic and Mediterranean in Europe. He has been three times the recipient of COA Grant awards, first in 1989 as a doctoral student, and subsequently in 1992 and 1995 during his postdoctoral projects on volutes and deep-water limpets.

José has been married for 15 years to Silvia, who is also a biologist. He is proud father to two daughters, Cecilia, eight years old, and Julia, two years old. We welcome him to COA and wish him and his family well in their new home in Florida.



Dr. José H. Leal, new Scientific Director of the Bailey-Matthews Shell Museum.

BOARDTALK.....

From Bobbie Houchin, Membership Director:

Many thanks go to the members for renewing for 1996. If you know of anyone who has not paid his 1996 membership dues, please urge him to do so. We don't want anyone to miss all the shell news in the *American Conchologist* and the 1996 COA Convention information.

Remember, the *American Conchologist* is sent by Bulk Mail rates and is not forwarded or returned to sender. Please send your change of address including the +4 of the zip code to:

Bobbie Houchin
COA Membership Director
2644 Kings Hwy
Louisville, KY 40205-2649

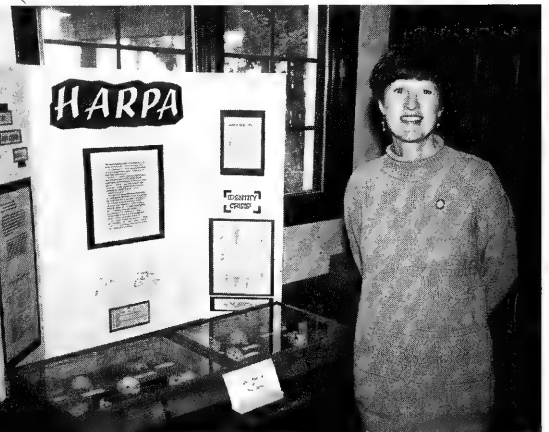
As Membership Director I appreciate the support and cooperation you give by paying your dues, recruiting new members, passing on a good word about COA and in many other ways. It will soon be convention time so I hope to see many of you on July 14-19 in St. Pete Beach, Florida

MAY-1995-MAY 1996 COA TROPHY WINNERS



Last May, the Belgian Society for Conchology COA Trophy went to Phillip Youk and Frank Celen of Belgium for their exhibit titled, "European Seashells." Pictured are Frank Celen, A. Delsaerd, Philip Youk, A. Verheken and Donald Dan.

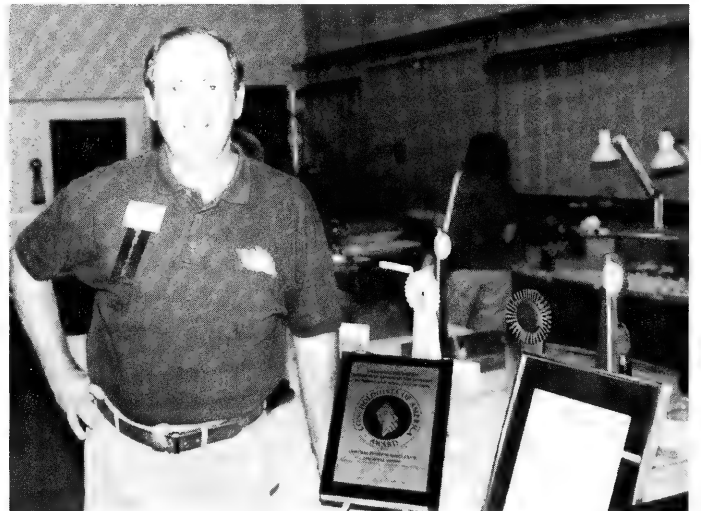
July 8-9, 1995 Chris Bunyard of Victoria, Australia, exhibited a very unusual entry at the Keppel Bay Shell Club Shell Show. Shells from many families, all unified by the common theme, "Striped Shells" composed the exhibit that won the COA Trophy for Chris.



On May 7, 1995, Pam Major of Lomita, California won the COA Trophy at the Pacific Shell Show for her exhibit of Harpa demonstrating the updating of the nomenclature of the Harpidae as well as their considerable beauty.



At the 1995 Jacksonville Shell Show the COA Trophy went to Sylvia and Jake Dominey of Orlando for their exhibit of 26 cases of Haliotidae. This exhibit had previously won the American Museum of Natural History, Du Pont and Smithsonian Trophies and the Sammy Lawson Award.



Gene "Supersheller" Everson of Louisville, Kentucky won the COA Trophy for his "Muricidae Worldwide" collection at the Central Florida Shell Show last Sept 16-17.

Kevan Sunderland's quarterly feature illustrating (mostly) Caribbean taxa and commonly known as "Kevan's Centerfold," is missing from this issue. Kevan's mother has been very ill, so time did not permit him to prepare the feature. We will have to wait until the September issue to find out what group of mollusks Kevan has chosen for illustration next. Kevan, we all thank you for the time you spend preparing this very helpful tool for our hobby, and send you our encouragement through your mother's illness.



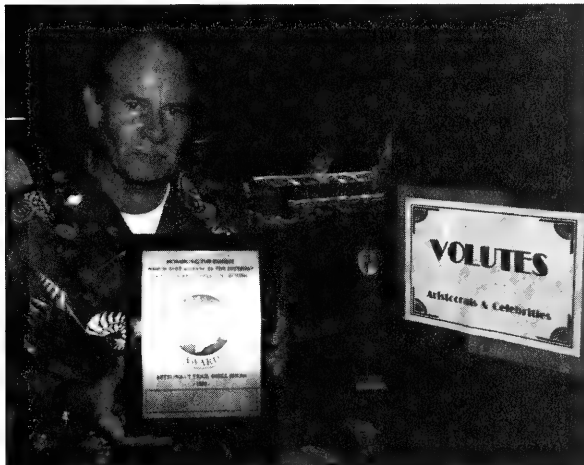
On October 28, The British Shell Collectors Shell Show awarded the COA Trophy to Peter Sheasby, above left, for an exhibit of worldwide murex entitled: "In the Pink — or Is It In the Orange?" Shown left is Judges' Steward Mrs. J. Sawyer, and presenting the trophy center, is Mrs. Una Dwnce, wife of Principal Judge S. Peter Dance.

Tom Grace of New Jersey won the COA Trophy Nov. 10-12, 1995 at the Philadelphia Shell Show, held at the Academy of Natural Sciences. Tom is an excellent diver and his exhibit, Shells of the Bahamas, featured shells he has collected there on his annual vacations in the islands.

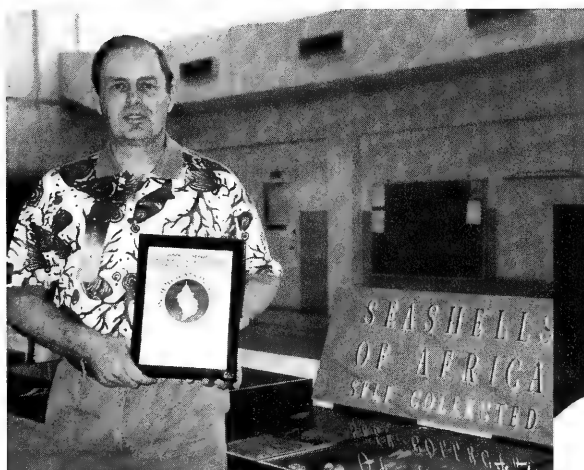
November 17-19, at the North Carolina Shell Show Ann Buddenhagen displayed her shells of Eleuthera exhibit, winning for herself a COA Trophy. Congratulations, Ann!



Jim and Bobbi Cordy of Merritt Island, Florida won the COA Trophy at the Astronaut Trail shell Show Jan 20-21 1996 for a 48' exhibit of worldwide volutes entitled Volutes — Aristocrats and Celebrities.



Darryl and Helen Kwiat of Casselberry, FL and the Central Florida Shell Club won the COA Trophy at Broward Shell Show Feb 2-4. Their exhibit was a 40' display of 360 shells found on Naviti Beach Nov. 26-30, 1988, "Discover Fiji—Naviti Beach."



In January 1996, Gene Everson won another COA Trophy, this one for "Self-Collected Shells of Africa" at the Greater Miami Shell Show. The exhibit contained such uncommon species as *Pseudoliva ancilla*, *Chicoreus corrugata*, *Babylonia papillaris* and an albinistic *Conus bairstowi*.



Feb 10-11, 1996, Steve Duenas of Ft. Myers Beach was awarded a COA Trophy at the Southwest Florida Shell Show for a cone exhibit entitled Conidae of the Philippines.

Feb 23-25 1996 the Naples Shell Club awarded the COA Trophy to Peggy Williams of Tallevast, Florida, and the Sarasota Shell Club. Exhibit title: Reefs, Wrecks and Rubble — Scuba Diving for Shells in West Florida.



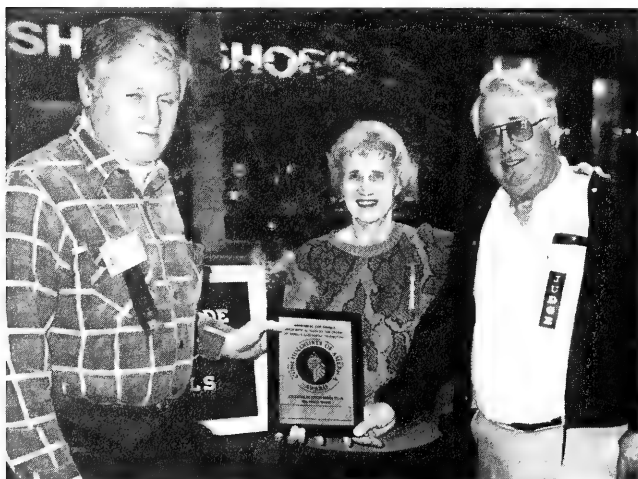
Janet and Bill Paddison of Sanibel were the winners of the COA Trophy at Marco Island Shell Show March 14-16 1996. Their winning exhibit was a single mirrored case of Harpidae.



The 59th Annual Sanibel Shell Show, March 7-10, presented the COA Trophy to Greta and Andy Murray of Bradenton, FL for their exhibit, The Fossil Muricidae of France. Andy, Greta and their two children are shown here with their trophy and their exhibit.



Florence Kuczynski of St. Petersburg, FL won the St. Petersburg Shell Show COA Trophy March 15-17 for her exhibit, "Keepers from a Retiree's Adventures." The exhibit featured self-collected treasures from Florence's collection.



Frieda Schilling won the St. Louis Shell Show (April 28-29) COA Trophy for her exhibit entitled "Worldwide Land Shells." Congratulations, Frieda! Flanking Frieda are judges Harry G. Lee and Bill Lyons.



Emilio Jorge Power is holding the COA Trophy he won at the Treasasure Coast Shell Show March 15-17, 1996 for his exhibit of Cypraea. His winning exhibit: Endemic *Cypraeovula* of South Africa, featuring four cases of species, hybrids and population forms of this variable cowry group. Emilio's comment, Yes! Yes! Yes!

LAST CHANCE TO DONATE FOR THE AUCTION

Hello everybody!

Next month is the convention in St. Petersburg, and the auction preparations are moving along nicely. For you latecomers, there is still time to send donations for the oral and silent auctions.

Highlights so far include a *Conus milneedwardsi*, several Florida *Liguus* and many other great shells.

Send donations to:

John L. Jacobs

202 Soldier Court

Seffner, FL 33584

Phone: 813/689/2644

Looking forward to seeing you all there!

TEXANS HOST A SHELL JAMBOREE

The First Great Texas Shellers Connection, a jamboree similar to the Florida Shellers Jamboree, was held last month with great success. We hear the attendance was good, the talks stimulating and of high quality, and the company, like the Texas hospitality, excellent! Congratulations to the San Antonio Shell Club members for their grand production, and all the Texas clubs which cooperated to make it such a success; to the speakers, Jean Andrews, Theresa Stelzig, Judy Lewis, Ardeth Hardin, Dave Green and Robert Howells, and to Bob Lipe, banquet speaker; to Dave Green, Auctioneer Extraordinaire, and especially to the Great Facilitator, Rosalie Taylor! May there be many more! (We already hear rumors of "Next year in Brazoria County!" Could it be true?)



Selma "Sammy" Lawson at the St. Petersburg Shell Show in March. Sammy is 96 this year.

Collecting Permits Workshop

A workshop for natural history museums and collectors on Federal and International Scientific Permits will be held in San Diego September 25-27, 1996. Sponsored by the San Diego Natural History Museum and co-sponsored by the Association of Systematics Collections, the workshop will address the confusion and controversy that often surround the process of applying for and maintaining valid collecting permits. The bilingual workshop (English and Spanish) will bring together scientists, agency representatives and collectors from several countries to examine the laws and provide clarification. Two of the topics to be addressed which will be of special interest to collectors are the roles, responsibilities and requirements of permitting agencies and the roles of scientific and avocational collectors.

News of the Belgian Shell Show at Aarschot

COA Member Guido Poppe reported that the 6th annual Belgian Shell Show, one of the biggest shell shows in the world, was a great success. The first weekend in May saw 2,000 visitors and 60 dealers convene with their wares, including Don Dan and Don Pisor, and COA members Bruno De Bruin and Werner Massier from South Africa, and Marcus and Jose Coltro and Mauricio Lima from Brasil. Though the show is primarily a sales show, there are also exhibits, and this year Patrick Anseeuw won the COA Trophy for his superb display of Pleurotomariidae.

13th Unitas Malacologia/64th AMU Meeting in 1998

AMU President Rüdiger Bieler (Field Museum, Chicago) has announced that, from July 25-31, 1998, Washington, D.C. will be the site of the World Congress of Malacology, a joint meeting of the American Malacological Union and Unitas Malacologia. Several other malacological organizations will participate in this meeting. Watch for details in the near future.

Two New Turridae Monographs Underway:

Dr Richard Kilburn of the Natal Museum at Pietermaritzburg, South Africa has undertaken, in the *Annals of the Natal Museum*, the Turridae of Southern Africa and Mozambique. The most recent paper in the series is Part 7. Subfamily Crassispirinae, section 2 and is available as a separate publication.

Dr Fred E. Wells of the Western Australian Museum at Perth is doing a revision of the Australian Turridae. Published in *Molluscan Research*, the most recent paper is "A revision of the Recent Australian species of the turrid genera *Splendrillia* and *Austrodrillia*." He has also published a revision of the New Caledonian genera *Splendrillia* and *Plagiostropha* in the *Paris Memoirs de Museum National d'Histoire Naturelle*. (On COA's CONCH-L, May 8, 1996)

SUBULINA OCTONA

by Beatrice E. Winner

In October of 1991, on one of my R.V. camping trips to Clewiston, Florida, under a large shaded tree I found many *Subulina octona* (Bruguière, 1789). I gathered some in a paper drinking cup and covered them with a piece of cloth to transport them home for study. When I arrived home I found that they had eaten a section of the paper cup. I placed them in a snailarium that contained four inches of damp earth and leaves. I have had the opportunity to study and photograph them. The following are a few of my observations.

The snail shells are cone shaped, have six to seven whorls, and are a transparent white in color. Adults measure 16-18mm in length. The animals within are grayish-white and have black eyes on the ends of stalks. The stalks are retractable and can be seen through the transparent shell.

Their diet consist of lettuce. At times an average of five eggs can be seen through their transparent shell. Eggs are laid approximately one inch deep in the earth. If conditions are not suitable — if, for instance, there is too much moisture in the earth — they will retain the eggs until it is time for them to hatch. The newly hatched snails will then crawl out from the parent snail.

I wanted to examine one of the eggs, so I picked up a snail and broke off a part of its lip to remove an egg. The egg measured 1.7mm. Under the dissecting microscope I gently cracked the egg open and saw that the larva had already developed a shell which consisted of an apex and two whorls. I covered the egg with a minimal amount of water in my petri dish. An hour later I returned to find that this preemie which I had removed from the adult was crawling about and did not eat the egg shell it had just exited. I placed a tiny piece of lettuce in the dish and it eventually began to eat the lettuce. The green lettuce could be seen in its gut through its transparent shell. Although "delivered" prematurely, it survived, as did the parent snail with the broken lip.

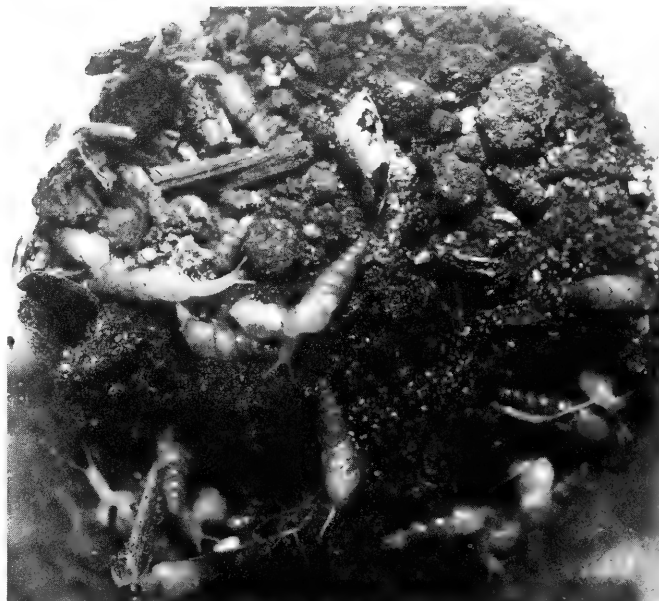
Twenty-eight days later the preemie that I had delivered had grown its third whorl and measured 2.2mm. Thirteen days later it measured 3.3mm. In 49 days four whorls were present and the shell measured 4.2mm. The snails become adults in a short time, generally two months.

Another study I did was to raise a juvenile snail to adulthood. I placed it in a container all by itself and fed it when necessary. I was completely taken by surprise by the sight, through its transparent shell, of eggs developing after a two-month period. It eventually carried five eggs. Since it was entirely isolated, my conclusion is that these snails self-fertilize. To date I probably have well over one hundred snails in my snailarium, because they are very prolific.

Conclusions: *Subulina octona* are live bearers as well as egg layers. If one uncovers the nest in the ground, an average of five eggs can be found. In unfavorable conditions for egg laying, they will retain the eggs until they hatch.

The snails are ovoviviparous — producing eggs incubated within the female body; the young emerge from the eggs before the eggs are deposited, while they are being deposited, or immediately afterward.

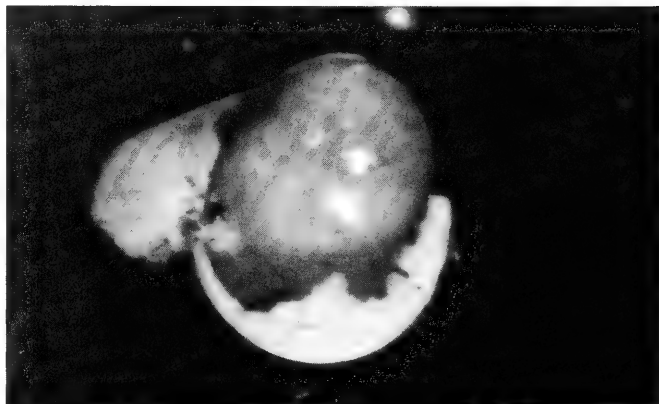
Eggs are produced all year round and no climactic factor is related to egg laying in this species.



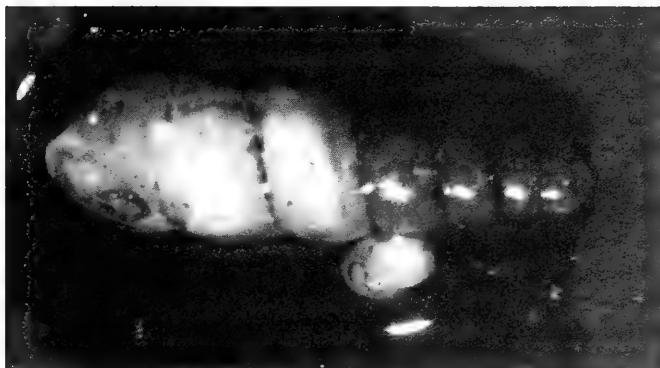
Subulina octona (Bruguière, 1789)



Subulina octona



Enlarged view of egg that is 1.7mm.



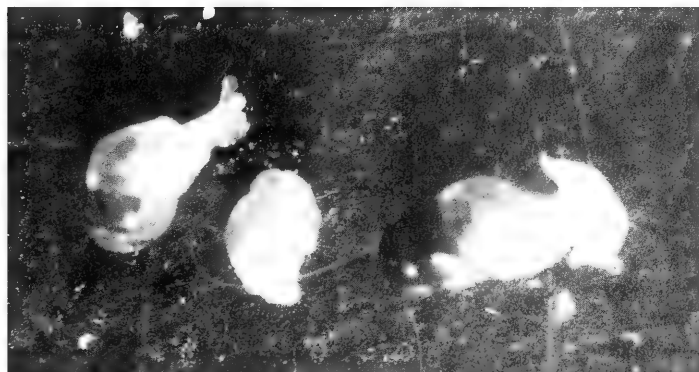
Snails average 16-18mm.



Eggs can be seen inside the snail's transparent shell.



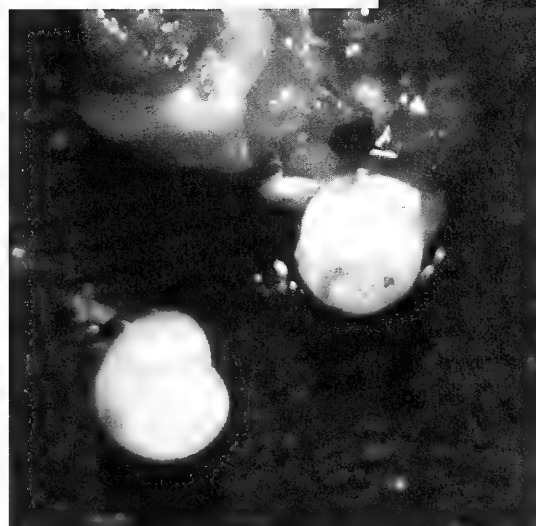
Eggs attached to body of snail



Juveniles about 3 weeks old.



Newly released eggs.
Top one has no egg shell.



Sources of Information:

- Burch, J.B. 1962. How to Know the Eastern Land Snails. Wm. C. Brown Company, Iowa. 214 p.
- Owiny, M.A. 1973. Some aspects of the breeding biology of the equatorial land snail. Zoology Department, Makerere University, Kampala, Uganda.
- Tompa, A.S. Editor. 1984. The Mollusca. Vol. 7. Reproduction. Academic Press, Orlando, Florida. 486p.

A DAY IN THE LIFE OF A SHELLNETTER — PART 1 ON THE INTERNET MAIL TRAIL

by Deborah Wills

The volume of mail reaching my house these days has increased considerably and, as my daughter pointed out, my responses have shortened in proportion. The more mail, the shorter the response. Well, there is a good reason for this — the less time used in writing, the more time available to read. Until recently most of the mail has been “junk” or bills. While that type of mail still comes, much more interesting notes are finding their way to my house.

Some examples of some recent mail, both incoming and outgoing, include a note from a friend describing a place to look for books on shells (always an interesting topic) and a note sent to a book dealer requesting a freshwater mollusk book by Simpson. Then there were notes concerning shells for sale and/or trade (another interesting topic) which inspired a response asking “How much?” and “Were any found in Alabama?” Other mail contained several short reports on conservation issues and reasons why the introduction of the snail *Euglandina rosea* was so disastrous to the natural snail populations of Hawaii. Speaking of Hawaii, I wrote a note asking for help in locating an old article on “miniature” shells in the sands of Hawaii. While the specific article wasn’t found, I did receive information concerning the micromollusks of Hawaii and other places. I even received a very long message on the “meaning of life.” (I still didn’t “get it,” so that one was disregarded as junk mail.)

I’ve received mail from around the world and been introduced to some really interesting people and places. There’s even been first-hand information on good shelling sites just in case I’m ever “in the neighborhood.” Are you thinking, “So what! I’ve been doing that for years?” Well, the difference may be that all of the above correspondence was performed electronically. No licking envelopes, trying to find stamps, determining how much postage to use, or waiting two to three weeks for a reply. Yes, electronic mail has come to my house!

Electronic mail, commonly called email, or e-mail, is one of the most basic services found on the Internet. Email is usually available even if you don’t have access to other services, such as the World Wide Web (WWW), and it is almost universally accepted through otherwise impermeable computer security systems which may prevent your access to other Internet services. A simple email software program and access to the Internet are all you need. Once established (set up), email is a convenient and fairly easy way for you to correspond between offices, schools, cities, states, and countries. Depending on how often you check for new email, a message and response can travel around the world and back the same day, or even the same hour.

Corresponding electronically with friends, relatives and colleagues on an individual basis is fun and rewarding, yet email has much more to offer. Unlike a phone call, email is non-interactive — you don’t have to wait for an immediate response but can disconnect and check back later — so it is a relatively inexpensive way to retrieve information. Email information servers are programs which will retrieve information at your command, and return it to your email address. Email “SEND INDEX” and the desired index can be “picked up” the next time you check your electronic mailbox. The commands may differ with the various services, but the principle is the same.

With email, you can access just about anything available on the Internet, including World Wide Web documents. Even experienced Internet users take advantage of these powerful email tools to save time and money, so don’t feel left out if you “only” have email access to the Internet. Books have been written on retrieving information using email, so check out your local library and bookstore for more information. Or, if you have access to the World Wide Web, check out The Whole Internet...By E-Mail (<http://www1.mhv.net/~bobrankin/inetbook.txt>).

Mailing lists are another type of email service which allows me to correspond with whole groups of people by sending (posting) a message to one address, the list address. “The List” then distributes that message to every member of that list. Mailing lists are commonly organized around special interests like gardening, woodworking, cooking, quilting, or even shell collecting. Most lists are free and there is usually a simple subscription process which can be as easy as emailing your name or email address to the “list server” — the computer program that automates the mailing list process. This type of mailing list is often referred to as a Listserv. (Note: Terms and addresses can often be confusing for the beginner. Two addressees are involved in list servers: the list server address — where you send subscription information — and the list address — where you post your messages to other list members. Another caution: be careful to match the spelling and capitalization of the address given in the subscription instructions.)

There are two Listservs of special interest to COA’ers — the Mollusca and Conch Listservs. Discussions on the Mollusca Listserv tend to be more academic in nature and are geared to those of us studying the taxonomic differences in mollusks. However, if that is your field of interest, check it out today. An online archive of past messages is available for browsing. The addresses for further information on the Mollusca Listserv are: <http://ucmp1.berkeley.edu/mollusca.html> or gopher://ucmp1.Berkeley.EDU:70/11/MLists/mollusca

Most of the shell-related mail I described at the beginning of this article came from being a member of the Conch Listserv (Conch-L). This exciting new forum for discussion was the inspiration of the Lambis Group, a new arm of COA that is organizing COA’s presence on the Internet, but it was the diligent efforts of Lambis Group member and Georgia Shell Club member, Amy Edwards, that actually birthed Conch-L. Conch-L was introduced to the world in March of this year and is hosted by the University of Georgia where Amy works as Program Coordinator for the Georgia Museum of Natural History. Conch-L now boasts over 120 members from 19 different countries and continues to grow each day. Don’t miss another minute of the action. Subscribe today. For further information, check out Amy’s FAQ page (Frequently Asked Questions) for Conch-L at http://service.uga.edu/natmus/CONCH-L_FAQ.html

If you already have email capacity, and would like to subscribe to Conch-L, simply send an email to listserv@uga.cc.uga.edu Put nothing in the subject line. In the body of the message, type:

SUBSCRIBE CONCH-L Your Name For example, I would type SUBSCRIBE CONCH-L Deborah Wills. However, unless your name is “Deborah Wills” too, substitute your name for

mine. You'll receive a message from the list giving some further instructions. Follow them exactly and you'll soon receive a confirmation message from Conch-L and will begin receiving mail with the next message to be posted.

The whole process takes place in a matter of minutes.

If you don't currently have email service, check to see what is available in your area. Communications technology, along with the rules and regulations that govern it, are changing rapidly. We may soon be able to access email and the Internet through our cable television service. Until then, you will need a computer, a modem, a phone line, and access to an Internet gateway (a computer system that connects to the Internet), even if you don't want access to the World Wide Web and other Internet services. Most Internet service providers (ISPs) offer email service, but not all provide the needed software. Major online services, such as AOL, Prodigy, CompuServe and Microsoft Network, provide email software with their service, and the newer Internet browsers, such as Netscape 2.0, have email capabilities built into them. There are also some inexpensive software packages available such as Eudora or Eudora Light.

Eudora came included with other programs in my Internet start up package (about \$30.00 US) and has worked fine for my present needs. It is a good basic program that allows me to receive, send, forward, direct reply, and store email messages. I can even attach another document file to a message, but be aware that some email readers can't accept attachments. Eudora has an "In box" and "Out box" where messages are kept until I'm ready to save them to disk, or delete ("Trash") them outright. I have an automatic "signature" set up which attaches my name and email address to each message I send out and I have created nicknames (short aliases) for those hard-to-remember addresses. There is however one major drawback to my edition of Eudora—the lack of a complete user's manual. (No "spell checker" comes in second.) Regardless of the email package you choose, make sure it performs the above basic features, then get online and start writing.

My email box is overflowing again, so I must stop for this edition. Besides, I need to learn more about those Sanibel shelling regulations and how they will affect Captiva, Florida (where the 1997 COA convention will take place). And those Conch-L discussions of how to catalog shell collections on the computer (with pictures) keep me wondering how my collection might be automated. Of course there's always Emilio P. — list jester and friendly antagonist — who says things from time to time just to stir up conversations and debates. I'd like to see Mike's collection of "century" cones (all over 100 cm long), or shell those interesting places Patty (from Australia) was talking about, but wait, there's another message coming in....

If you don't have email, get it. You'll wonder how you ever communicated without it. If you do have email and are not on Conch-L, you're missing a lot too. In fact, why not send a message to Conch-L (Conch-L@uga.cc.uga.edu) and let the rest of us know you made it. Till then, this is one ShellNetter looking for other ShellNetters on the Internet mail trail.

1996 SUMMER & FALL SHELL SHOWS AND MEETINGS

- | | |
|---------------------|---|
| Jun. 29 -
Jul. 3 | American Malacological Union Annual Meeting
Chicago, IL
Rudiger Bieler, Div. of Invertebrates
Field Museum of Natural History
Roosevelt Road at Lake Shore Drive
Chicago, IL 60605 (312) 922-9410 ext.270 |
| Jul. 13-14 | Keppel Bay Shell Show
Yeppoon, Queensland, Australia
Jean M. Offord, 277 McDougall St.,
N. Rockhampton, Qld. 4701, Australia (79) 283-509 |
| Jul. 14-19 | Conchologists of America Annual Convention
St. Petersburg Beach, FL
Bob & Betty Lipe, P.O. Box 49191
St. Petersburg, FL 33743 (813) 360-0586 |
| Jul. 27-28 | Townsville Shell Show
Townsville, Queensland, Australia
Glenda Rowse, 19 Farrell Street
Kirwan 4814, Queensland, Australia (77) 732-817 |
| Aug. 9-11 | Jacksonville Shell Show , Atlantic Beach, FL
Judy Blocker, 102 Magnolia Street
Neptune Beach, FL 32266 (904) 246-4012 |
| Aug. 15-17 | Jersey Cape Shell Show , Stone Harbor, NJ
Jersey Cape Shell Club, P.O. Box 124
Stone Harbor, NJ 08247 (609) 653-8017 |
| Sep. 7-8 | Gulf Coast Shell Show , Panama City, FL
Jim & Linda Brunner, P.O. Box 8188
Southport, FL 32409 (904) 265-5557 |
| Sep. 13-22 | Oregon Shell Show , Portland, OR
Maxine Hale, 347 N.E. 136 Ave.
Portland, OR 97230 (503) 253-5379 |
| Sep. 21-22 | International Shells & Fossils Bourse
Ottmarsheim, France
Michel Rioual, 2 Rue des Vergers
68490 Ottmarsheim, France 89-26-16-43 |
| Sep. 28-29 | Central Florida Shell Show , Orlando, FL
Helen Kwiat, 1329 Sterling Oaks
Casselberry, FL 32707 (407) 695-3887 |
| Oct. 5-6 | Annual German Shell Fair , Eismar, Germany
Vollath Wiese, Baderstrasse 26
23743 Eismar, Germany (4366) 1288 |
| Oct. 26 | British Shell Collectors' Club Shell Show
London, England
Kevin Brown, 12 Grainger Road
Isleworth, Middlesex TW7 6PQ
England (181) 568-8333 |
| Nov. 9-10 | Philadelphia Shell Show , Philadelphia, PA
Al Schilling, 419 Linden Ave.
Glenside, PA 19038 (215) 886-5807 |
| Nov. 15-17 | North Carolina Shell Show
Wilmington, North Carolina
John Timmerman, 206 Quail Ridge Road
Wilmington, NC 28409-2637 (910) 452-0943 |

Undeniably those vulnerable and fascinating mollusks we variously call freshwater or pearly mussels, naiads, unios, or river clams are becoming scarcer by the day due to agricultural, residential and industrial pollution, habitat destruction, dams, poaching and over-fishing. But those of you who just got interested or thought freshwater musseling opportunities were going the way of the typewriter and boy-calls-girl just haven't checked out Texas. Bob Howells of the Texas Parks and Wildlife Department, Heart of the Hills Research Station in Ingram, Texas, actually approached us about interesting collectors in his unique mussels.

The Tampico Pearlymussel (*Cyrtonaias tampicoensis*): SHADES OF THE OLD WEST

Robert G. Howells

Shell collectors often venture far and wide in pursuit of unique mollusks. Yet travelers to the other side of the planet after that special shell may be overlooking an especially unique species right at home. Long before Lyndon Johnson carried his dog around by its ears, before Davy Crockett ever fired Old Betsy at the Alamo, and before the Yellow Rose of Texas first rolled in the hay with Santa Ana, early Spanish explorers ventured into western Texas in search of the Tampico pearlymussel (*Cyrtonaias tampicoensis*; family Unionidae) and the gem-quality freshwater pearls it frequently produces. Clemmens (1981) reported how Hernan Martin and Diego del Castillo arrived in 1650 near what is now the city of San Angelo on the Concho River (river of shells) in western Texas. Pearls they obtained there were sent back to Sante Fe and caused enough excitement that in 1654, Diego de Guadalajara was also sent into the area to locate as many pearls as possible. Some reports suggest excessive harvest of mussels and others mention enlisting the local Indians in the pearl-harvest efforts. Most agree the number of pearls obtained were apparently well below Spanish expectations.

At least in part because of the Tampico pearlymussel and its pearls, Spanish attention was drawn to this area. Missions were constructed and ultimately the present city of San Angelo developed. Although Spanish colonial days have long ended, San Angelo, the Concho River and Tampico pearlymussels endure. A fishery for the mussels and the pearls they produce also continues.

Tampico pearlymussel occurs from northeastern Mexico into the Colorado and Brazos Rivers of central Texas. Although many, if not most, members of the family have declined dramatically in recent years, Tampico pearlymussel numbers have held up rather well. It evolved as a riverine mussel (there were no natural lakes within its range in Texas); however, it has adapted well to man-made impoundments. While riverine populations have been subjected to dewatering during droughts and severe scouring during floods, some reservoir populations have flourished. Today, reservoirs from the Rio Grande to Abilene and Waco still support significant populations of Tampico pearlymussels, as do some rivers and streams.

This unique unionid reaches over 130mm in shell length and has a general shape reminiscent of *Mercenaria* or *Spisula*. There is no significant external shell sculpturing. Coloration varies from yellowish-brown with faint green rays to dark brown and black. Internally, nacre is typically purple, but may be lavender, pink, orange, salmon, white or multicolored. Boldly-colored nacles are comparable to anything grown on a tropical coral reef. Tampico pearlymussel pearls are the same colors as the nacre (imagine a deep purple pearl). Pearls occur freely in the soft tissues of about 3-4% of individuals, with



Tampico pearlymussel (*Cyrtonaias tampicoensis*) Twin Buttes Reservoir, Tom Green County, Texas, August 1994, 122mm shell length. Many specimens display a bright purple nacre (usually poorly represented in color photographs) and produce a pearl of the same color. This specimen shows an indentation near the posterior margin of the shell where a pearl was once positioned. Because of their tendency to have pearls in this position, many musselers who have attempted to open a specimen while standing in the water have watched while an impressive pearl tumbled free and sank out of sight.

about that same percentage having pearls or other imperfections attached to the shell. Although some individuals have taken pearls over 10mm in diameter and valued at thousands of dollars, true gem-quality pearls are very rare . . . perhaps one in 500 to 1,000. Realistically, if pearls were common, their value would be far less.

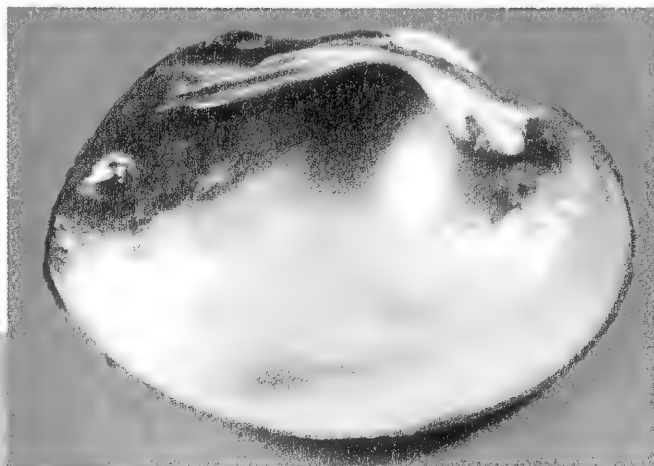
Habitat of Tampico pearlymussel ranges from relatively small streams to large reservoirs. Although they sometimes occur at substantial depths, most usually inhabit waters less than 20' deep. They seek out substrates of sand, mud and fine-

CAUTION

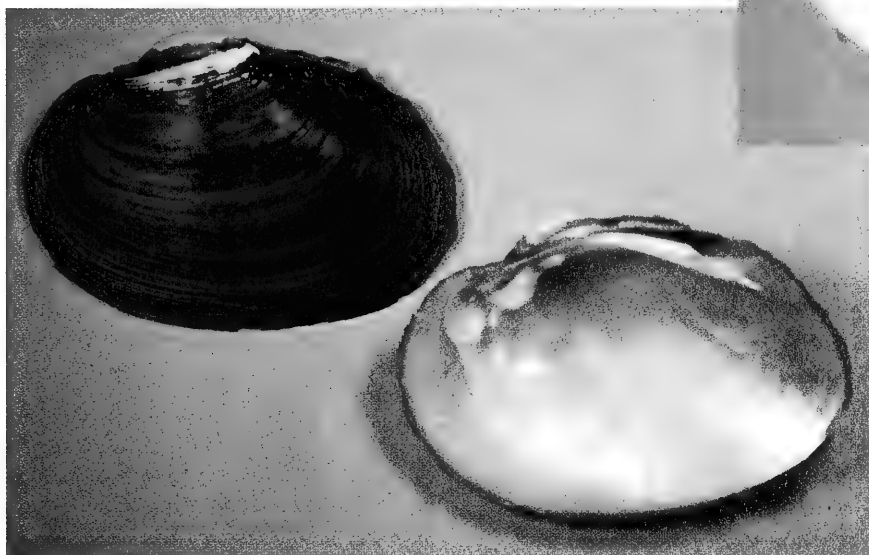
Many species of freshwater mussels fall under a variety of federal and state regulations, and regulations can sometimes change rather quickly. Species which can be legally harvested in one state may be considered endangered in another. Always check with local authorities before collecting any freshwater mussel or transporting it into another state. Also remember, collecting freshwater mussels can be extremely hazardous. Broken glass and rusty cans can cause cuts; branches and trotlines may cause entangling problems. Both scientific and commercial divers have been lost while collecting mussels. Always use caution.

to moderate-sized gravel and avoid deep-shifting sands, very soft silts, and hard cobble and bedrock. Many musselers locate Tampico pearlymussels by wading shallow waters and feeling for specimens with their feet. Still others snorkel or dive with SCUBA or hookah pumps. It is important to remember most reservoirs which harbor Tampico pearlymussels lack the clarity of coral reefs of the South Pacific. Visibility is usually near zero and collection is almost completely by touch (not a harvest method for the claustrophobic).

(Continued on page 26)



Tampico pearlymussel (*Cyrtonaias tampicoensis*), Nasworthy Reservoir, Tom Green County, Texas, September, 1992, 67mm shell length. This specimen has a pearl embedded in the shell at the posterior margin.



Tampico pearlymussel (*Cyrtonaias tampicoensis*), Twin Buttes Reservoir, Tom Green County, Texas, August 1994, 108mm shell length. Although most specimens have purple nacre, color may be lavender, pink, orange, salmon, white or multicolored and range from dark to pastel. Pearls produced may also occur in these same colors.

Below: Bleufer (*Potamilus purpuratus*), 132mm shell length male. Below: Tampico pearlymussel (*Cyrtonaias tampicoensis*), 122mm shell length, sex undetermined. Bleufers often occur with Tampico pearlymussels and they are sometimes confused. Externally, bleufers are less deep-bodied anteriorly and deeper, often alate, posteriorly. Bleufers also produce pearls, but do so much less frequently than Tampico pearlymussels.



Above: Tampico pearlymussel (*Cyrtonaias tampicoensis*), 122mm shell length, sex undetermined. Below: Bleufer (*Potamilus purpuratus*), 132mm shell length, male. Both from Twin Buttes Reservoir, Tom Green County, Texas, August 1994. Lateral teeth in bleufers typically angle upward or are nearly horizontal, but in Tampico pearlymussels, lateral teeth usually angle downward. Additionally, within the range of Tampico pearlymussel, bleufers usually show a more rosy nacre, and that of Tampico pearlymussels is often closer to purple. In more eastern bleufer populations, nacre is often much more purple than in central and western Texas specimens.



SHADES OF THE OLD WEST (Continued from page 25)

Another similar unionid called bleufer (*Potamilus purpuratus*), somewhat similar in appearance, occurs in most of the same areas as Tampico pearlymussels. It typically ranges throughout much of the Mississippi River Valley west into western and southern Texas. Bleufer has purple nacre which often appears slightly more rosy in western populations. Sexually dimorphic, the males are more elongate and females more posteriorly truncated and inflated. Much deeper bodied posteriorly than the Tampico pearlymussel, some bleufers are rather alate (winglike). Even some past experts have confused these two species.

Current mussel-harvest regulations in Texas allow collection of up to 25 pounds of whole mussels per day with a standard fishing license. Harvest of greater amounts requires a commercial mussel license. Additionally, there is a 2.75-inch minimum shell height requirement; smaller specimens must be released unharmed. Most musselers determine legal size by passing the mussel through a ring of PVC pipe with a 2.75" inside diameter. Harvest in Texas is also restricted to hand collection; dredges, brails and other harvest devices are prohibited. Lastly, there are 28 no-harvest mussel sanctuaries around the state which hopefully provide protection to brood stocks which will distribute offspring up- and down-stream from the sanctuary sites to perpetuate the fishery.

Although some individuals have expressed disdain over the continued harvest of Tampico pearlymussels for pearls, this harvest may actually serve a purpose. Freshwater mussels of the family Unionidae are among the most rapidly declining faunas in North America. Roughly half are extinct, endangered, threatened or in line to be listed. Continued harvest of the Tampico helps draw attention to a largely unnoticed but seriously troubled group of animals. Were it not for sport and commercial harvest, freshwater mussels in Texas would likely still remain largely unstudied and unprotected.

A number of reservoirs in Texas support relatively easily collectible Tampico pearlymussel populations. Falcon and Armistad Reservoirs on the Rio Grande are currently at very low levels which have left many mussels stranded on dry lake beds or in shallows. Lake Corpus Christi on the Nueces River, Nasworthy Reservoir on the Concho River and Lake Buchanan

on the Colorado River can be noteworthy collection sites. Ease of collection, however, often reflects recent hydrological conditions. For example, Lake Buchanan experienced a decline in water level for a period of years, but in 1992, it abruptly caught 30' of water during a very wet spring. No living mussels could be found at shallower depths, and it took nearly a year for them to crawl slowly back into shorezone areas. If water levels rise suddenly, collection may be difficult for an extended period of time.

Next time the lure of far-away, expensive collection sites calls, without the time and funding to satisfy the urge, consider overlooked species at home. Although it is true that waters harboring the Tampico pearlymussels do not have attractive island women in grass skirts dancing on the shoreline, when was the last time anyone collected a Golden Cowrie under the scrutiny of a herd of longhorns? While the threat of man-eating sharks and poisonous sea snakes is also lacking, the occasional giant alligator gar or ill-tempered water moccasin can still prove interesting. Following tracks of the early conquistadors in central and western Texas can be an experience in itself.

Latest information from Bob Howells indicates that his book, *Freshwater Mussels of Texas*, written with Raymond Neck and Harold Murray will be ready about the end of August or early September. We hope to have a few order forms at the convention in July at the COA table.

And a rather rewarding development in the study of these remarkably sturdy mussels is the discovery this spring of the host fish for their reproductive cycle: the Longnose gar. Continued health of the Tampico pearlymussel species depends on the continued presence of this fish.

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Above: Tampico pearlymussel (*Cyrtornaias tampicoensis*), 122mm shell length, sex undetermined. Below: Bleufer (*Potamilus purpuratus*), 132mm shell length, male. Both from Twin Buttes reservoir, Tom Green County, Texas, August 1994. Pseudocardinal teeth among equal-sized specimens are usually more massive and molar-like in Tampico pearlymussel, but are smaller and more compressed in bleufers.



Bleufer (*Potamilus purpuratus*), 132mm male above and 114mm female below. Both from Twin Buttes Reservoir, Tom Green County, Texas, August, 1994. Bleufers are sexually dimorphic: males are more elongate and less inflated, while females are posteriorly truncated and more inflated.

MUSSELS MAKE THE FRONT PAGE

UNLAWFUL HARVESTS DEplete BEDS FOR LEGAL FISHERMEN

Mussel poachers risk their lives to ply lakes for big underwater profits

Who'd have believed it! In Kentucky, where basketball is the preoccupied king, coal and whiskey and tobacco enjoy a tripartite regency, and horse racing runs a close fourth, somebody cares about the environment! And not just the air quality either. On May Day, 1996, the *Louisville Courier-Journal* ran a 3-column front-page story about freshwater mussels! Above the fold! Complete with color photo of a musselman, his boat and brail. The times they are a-changin' indeed! And the reporter, James Malone, a *Courier Journal* staff writer, pulls out all the stops:

"Firmly in the grip of quarter-moon darkness, a dangerous high-stakes game of hide and seek unfolds on the rippling waters of Kentucky Lake (in far western Kentucky). Go-fast boats, night-vision goggles, wet suits and two-way radios are standard gear in this stealthy drama.

"Are these cocaine traffickers? Smugglers moving midnight shipments of duty-free cigarettes? No, these are modern-day buccaneers chasing the enormous profits they can reap by illegally harvesting the freshwater mussel...."

The article continues with stories of the poaching craft being deeply entrenched in the culture of the area, handed down from father to son. Homemade diving rigs involving an acetylene tank and a garden hose enable the poachers to clean out a bed of mussels. In Kentucky, the only legal means of taking mussels is by use of a brail, a pole with a series of cords hanging all along its length. Each cord has a number of dull hooks fastened to it at intervals. When the pole is pulled horizontally through the water by a boat, the cords drag along the bottom. Mussels are tricked into shutting their valves on a cord and its hooks as it drags over them, then pulled from the water still clamped to the hooks, pried loose and dumped in a

musselman's bucket. Or released unharmed if they are undersized.

It is, the licensed musselmen claim, a hit-or-miss operation and the poachers can outfish them every time. Furthermore, the large number of poaching operations and the lack of any limits on their catch is depleting the harvest of the legal fishery. At up to \$6 a pound for large "washboards," a skillful poacher on a good day, er, dark night, can clear \$1,500, a profitable business.* But it is also risky business. Fines on poachers are levied unevenly: though some receive no more than a slap on the wrist, fines as high as \$65,000 are on record, as well as jail time and confiscation of boat and equipment. And on moonless nights with inadequate equipment, poachers not uncommonly die beneath the dark waters.

Feelings run high on the issue and the claim is made that such heavy punishment is unjust for a victimless crime like poaching, that no one is being hurt by it. But the Kentucky Fish and Wildlife Commissioner disagrees. He feels the poaching industry is robbing us all of organisms that clean our water, so it is a crime against us all.

Nobody seems to be worrying about the mussel itself, and its enduring presence on earth. And Kentucky enforcement officials haven't the manpower to do the job of controlling Kentucky poachers, let alone those Tennesseans who slip across the lake at night to fish in richer Kentucky waters. So mussels continue to be pulled from their beds in Kentucky Lake silt on dark nights and destroyed, so that their shells, supposedly the best in the world for the purpose because of their purity, may be bought and shipped to Tennessee, steam-cleaned and then shipped to Japan to be used as seeds in the cultured pearl industry.

*Another source says \$4,000.00 a night.



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You'll enjoy going collecting with Tucker Abbott, William J. Clench, Henry van der Schalie, Jeanne S. Schwengel, Frank C. Baker, and Wendell O., Gregg. There's Ruth Turner on

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From the introduction by Tucker Abbott to the reading list of useful books and periodicals, the book is still an incredibly rich source of conchological and malacological lore. If you have never seen this little must-have paperback, get a look at a copy. Pity is, it'll be hard to get in any condition. Someone ought to look to republication.



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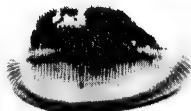


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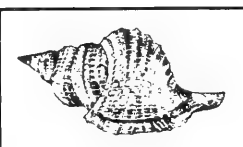


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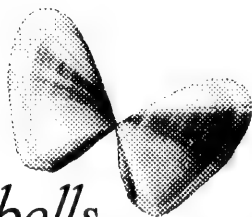
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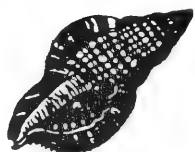
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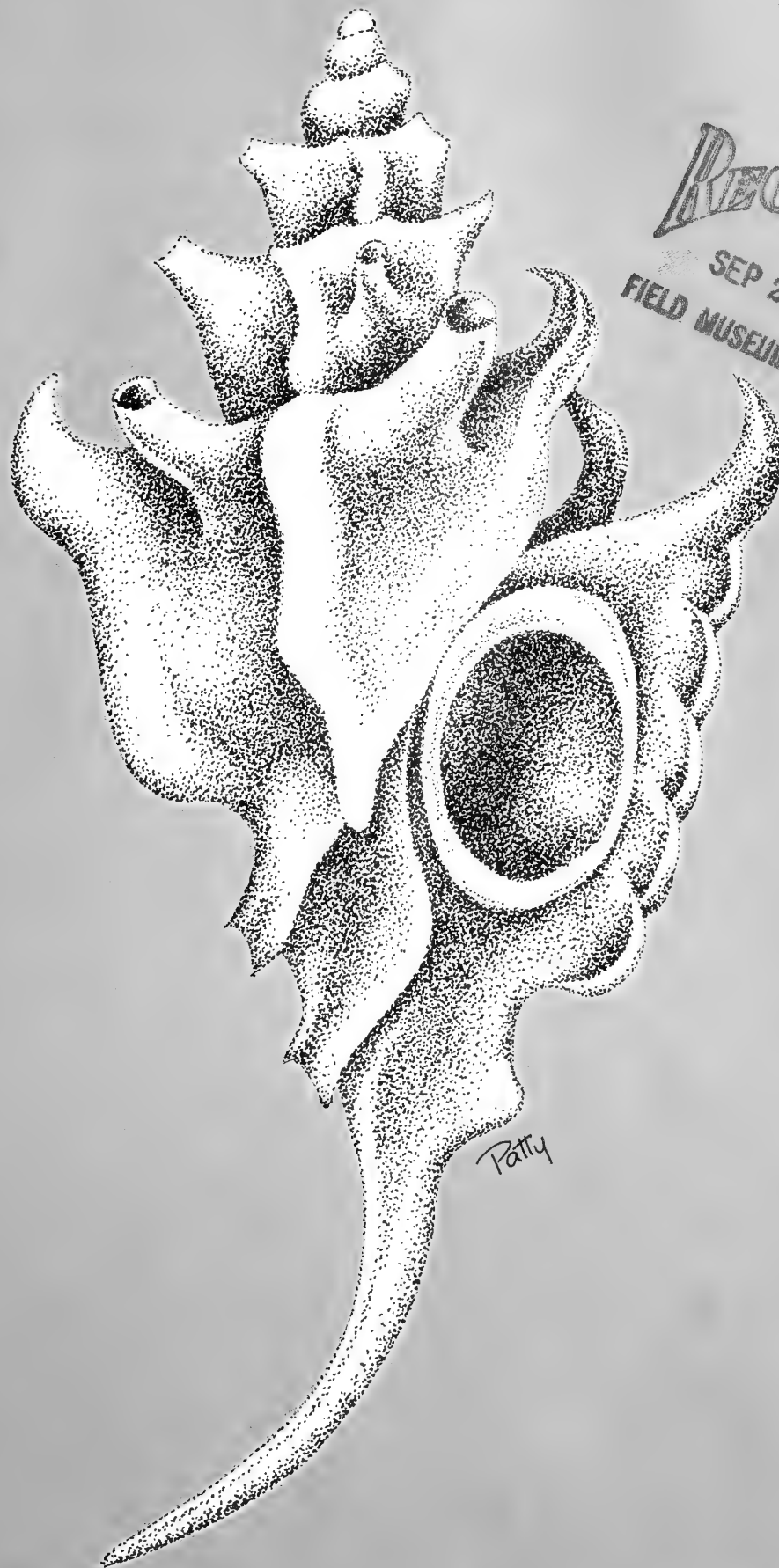
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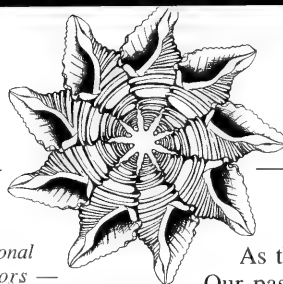
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Memberships are for the calendar year, January through December. Late memberships shall be retroactive to January. **DUES FOR 1997:** (per year, USA, Canada, Mexico) \$20.00; There is a postal surcharge of \$10.00 for other nations in the Western Hemisphere; \$12.00 for Europe, and \$15.00 for Asia, Africa and the Pacific Rim. Please make checks payable to CONCHOLOGISTS OF AMERICA. Please pay in U.S. dollars or with a check that has Transit Enrouting and Account Numbers printed at the bottom of the check, or with a money order; **NEW MEMBERS** are sent to Lucille Green, **MEMBERSHIP DIRECTOR**. **RENEWALS** are sent to the **TREASURER**, Bobbie Houchin. **BACK ISSUES** are available from **PROPERTIES DIRECTOR** Hank Foglino, 4 Trent Court, Smithtown, NY 11787-1266. Prior to 1985, \$3.00 each; 1985 to current, \$5.00 each.

PRESIDENT'S MESSAGE

As the new president of COA, I have a tough act to follow. Our past-president, Linda Koestel, did a great job during her two years as president. Through her diligent work and that of the Board of Directors, COA is better today than it was two years ago. I pledge to all COA members that I will strive to continue that success story and capitalize on the strengths of the new board.

For those COA members who did not attend this year's convention in St. Petersburg Beach, you missed out. Through the hard work of Bob & Betty Lipe, Convention Chairpersons, and the entire St. Petersburg Shell Club, this is one convention which will long be remembered, right down to this year's theme, "Diamonds In The Sun." Thanks to the tireless work of the club, it was a week of fun and relaxation. Financially, the convention was a big boost to our treasury. COA did very well at the annual auction and silent auctions, the dealer's bourse was spectacular as usual, and we sold a huge portion of Walter Sage's personal collection of shell fabric. I would like to express my sincere appreciation to all of the 300-plus members who attended this year's convention and helped make it such a success.

You might as well get your calendar out and mark July 13-18, 1997, so you will not forget to join all your friends at the "Silver Anniversary Convention" at the South Seas Plantation on beautiful Captiva Island, Florida. You only get one opportunity to attend a 25th anniversary convention. These are exciting times and we are blessed with the possibility of this spectacular convention.

One of the biggest and most significant accomplishments at this year's convention was the COA Web Site/Homepage, known as the **Conch-Net**, and COA's Listserv, **Conch-L**, a mailing list on the Internet. I would like to express my appreciation to all the members of the Lambis Group for their hard work and creative ideas which have gotten COA to this point. Thanks to the Lambis Group, COA now has a wonderful presence on the Internet which should attract new members and give us a presence in the international world of conchology and malacology.

As your new President, I will maintain an "OPEN DOOR" policy to all our members, just as I do in my professional life. Please feel free to contact me with ideas which will make COA better, or concerns which you feel COA needs to address. My address and phone number are listed in this issue of American Conchologist. My e-mail address on the Internet is DaveGreen@gnn.com. I welcome your ideas and look forward to serving you.

DAVE

In Memoriam

Ruth Botts
Kathleen Yerger Johnstone
Gary Magnotte
Cleta Mahavir
Dietger Weyer

COVER: Our cover artist, Patty Jansen, has chosen the lovely *Typhis yatesi* as her subject. The specimen belongs to Glenda Rowse of Townsville, Australia, and was collected near Melbourne, in Westernport, Victoria. Patty is the author of the new book, *Seashells of Central New South Wales*, which she illustrated with her fine drawings. She can be reached at 11 Eden Street, Belgian Gardens, Q'ld 4810, Australia and emailed at Filejest@internetnorth.com.au

FUTURE OF SHELL COLLECTING

by Carole Marshall

At the convention in St. Petersburg, FL this past July, Conchologists of America held a symposium on the Future of Shell Collecting. The participants in the panel, chaired by Jim Brunner, were Dr. Dennis Jones, Florida House of Representatives from the St. Petersburg area, Don Hanson from the Marine Fisheries Commission, Dr. Gary Rosenberg from the Academy of Natural Sciences of Philadelphia, Kurt Auffenberg from the Florida State Museum in Gainesville, Florida and Carole Marshall, representing shell collectors, and head of the Legislative and Action Monitoring Committee for the C.O.A.

Each person spoke for about 5 minutes, after which the audience asked questions of the panelists. State Representative Dr. Dennis Jones explained the problems involved in trying to be an expert on everything the day after being elected, and that our elected officials need to rely on individuals to help them be experts on diverse subjects. He recommended that each club get involved with the state representative from its district so when a vote comes up on shelling issues someone who knows about the issue will be there to advise that representative.

Don Hanson explained a little of how the process of making laws works and stated repeatedly that if we do not attend local meetings and know what is going on our voices will be overridden by those who do attend the meetings, and who may not be as well informed.

Dr. Gary Rosenberg underlined the importance of the shelling community in past and future research. He explained that part of the problem in shell collecting laws is that shell collectors are often confused with those who are part of the commercial establishment — those with bins of shells for sale or those who take commercially viable food products such as oysters, clams and scallops. He pointed out that whereas private collectors may collect worldwide a couple of million shells per year, commercial enterprises may take up to 50 billion shells per year. Gary stressed the need to compile local faunal lists so that we can advise those in the law-making processes what was living and what is currently living in our local areas. He also explained the importance of mollusks in knowing environmental conditions past and present.

Kurt Auffenberg stated that in almost all instances, the major museums of the world were begun through the gifts and collections of private citizens. These individual naturalists were, in most cases, the first to step onto other shores to collect plants and such animals as mollusks. Their collections were then the basis for the museums of the world. Private collectors are needed, he emphasized; with only a handful of professional malacologists in the world and a lot of work that still needs to be done, particularly field work, we are the ones to do it. Kurt echoed Gary's stress on the need for local faunal lists, and pointed out the importance of listing land and fresh water mollusks as well.

Carole Marshall spoke on the importance of "extra-academics" in educating the community via talks to schools, scouts and civic groups and in providing scholarships and grant monies for molluscan studies and research. In recent research Carole has learned that, in the past 10 years, approximately \$140,455 was given for scholarships and grant monies by Florida shell clubs alone, and that COA has given \$36,760 for a 10 year total of \$177, 215.* Carole stressed the need to compile this information on a countrywide scale so we have figures available the next time they are needed anywhere in the country. We must get involved — even though we would



The Panel of Experts at our Conservation and the Future of Shell Collecting Seminar. From Left: Representative Dennis Jones of the Florida Legislature, Florida Marine Commission representative Don Hansen, Dr. Gary Rosenberg of the ANSP, Philadelphia, Dr. Kurt Auffenberg of the Florida Museum of Natural History, and COA's Conservation Chairman, Carole Marshall. Photo by John Parkhurst

rather be home playing with our shells, we need to take the time to speak out. She also said that in her opinion no state that has beach renourishment projects deserves to have any laws pertaining to collecting mollusks and called for a volunteer club to make estimates of how many mollusks are actually killed in the beach renourishment projects.

The audience had many very significant contributions to the evening's discussion, but the main thrust of all messages was the need to know what is going on in your area, to write letters, to attend public meetings, to know your legislators, and to make those phone calls, get involved and let your voice be heard.

*COA's current total donations to educational grants since the program's inception in 1985: \$50,960.00. Our grants for 1996-97 are announced on page 14. See the entire list of COA Grant Recipients, their grants and project topics on the Conch-Net Grant Page, URL: <http://coa/acnatsci.org/conchnet/grantees.html>

NOTICE • NOTICE • NOTICE • NOTICE • NOTICE •

Please NOTICE: COA dues have been increased. This increase is reflected on your enclosed dues renewal envelope. The increase is to help offset the cost of your *American Conchologist*, which has steadily been going up through the years.

New Rates are \$20.00 Individual, Family or Institution

To offset postage increases through these same years, the following rates for subscribers outside the U.S., Canada and Mexico will be in effect for 1997:

Western Hemisphere: add \$10.00

Europe: add \$12.00

Asia, Africa, Pacific Rim: add \$15.00

LANDSNAILS AND SCENERY IN MALAYSIA

by Neil E. Fahy

Haven't you always wanted to explore the tropical jungles of Borneo? Well, in 1995 my own dream came true — landsnail collecting in Borneo — when I joined a tour of sixteen people to Malaysia. The country consists of two areas — Peninsular Malaysia and two states (Sabah and Sarawak) on the island of Borneo. Unlike Indonesia, which I visited in 1994, Malaysia is not located on a subduction zone and consequently lacks volcanoes and earthquakes. Which is OK with me.

Let's take a brief look at the world of landsnails. Living on land, they occupy almost every habitat along the sea, in the deserts and on the mountain peaks. Landsnails are separated into two large groups - those breathing with gills (Prosobranchia) and those breathing with lungs (Pulmonata). The gilled snails have a single pair of tentacles with the eyes located at the base, and an operculum for sealing the generally rounded aperture, and the sexes are usually in separate animals. They are mainly tropical animals with a few genera in semi-tropical areas. The snails with lungs have two sets of tentacles with the eyes at the tip of the upper pair, lack an operculum, and are hermaphroditic. The great majority of landsnails are pulmonates. In Malaysia, however, the prosobranchs comprise a third of the recorded species!

We flew from California to Peninsular Malaysia, landing at Kuala Lumpur, the capital, where I found the ever-present African landsnail *Achatina fulica* and the "tropical tramps" *Subulina octona* and *Bradybaena similaris*. The 3-4" *Achatina fulica* with its radial brown flames has been introduced as a food source throughout Southeast Asia and most of the islands in the Pacific. It feeds on live vegetation and is a crop menace. The "tropical tramps" are found everywhere in the tropics near habitation. *Bradybaena similaris* is usually helicoid, with a single brown stripe. *Subulina octona* is recognized by its shining shell surface, cylindrical shape, truncate columella, and lack of strong sculpture.

Our destination for the next four days was the national park northeast of Kuala Lumpur called Taman Negara — which conveniently means "national park." This virgin lowland rain forest is on the eastern drainage of the peninsula, a three hour bus ride to Kuala Tembeling and a three hour boat ride to the park. The boat had back rests and a pad for sitting, but the pad was on the floor. We sat, feet outstretched, on the bottom of the boat for the three hour trip upriver. Because the area had been logged, the scenery was not very exciting and the river was chocolate brown.

Comfortable accommodations at Kuala Tahana blended with the environment. Went for an hour-long night walk after dinner. The temperature was hot and steamy, the forest, dark and dense. Using flashlights we scanned the foliage for animal life. We saw one inch long velvet ants and two live *Cyclophorus*. These snails have a large (30-70mm) depressed shell with a flammulate or spiral color pattern. According to the early literature they are dangerous. If they crawl across your shadow, they will drain your blood and cause your death. I didn't believe this, but I did avoid their contact with my shadow. No sense taking chances.

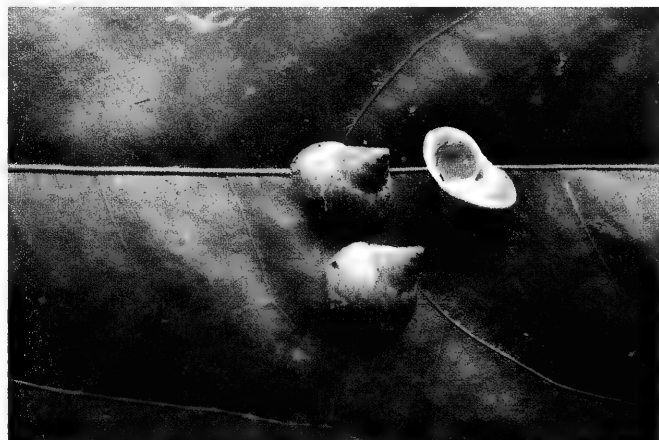
Woke up to the morning prayer at 5:45. Along the path to the dining room were many live *Chloritis* — 18mm greenish-brown shells with a red spiral band near the rounded periphery, a perforate umbilicus and a white reflexed lip. After breakfast we went on the new canopy walk. Completed in 1992, it is 230 meters long with six bridges, five platforms, and is 30 meters high. An interesting experience but we didn't see much wildlife.



The operculum of *Cyclophorus* sp. is easily seen. Peninsular - Taman Negara



According to the literature some *Cyclophorus* species are "dangerous." Peninsular - Taman Negara

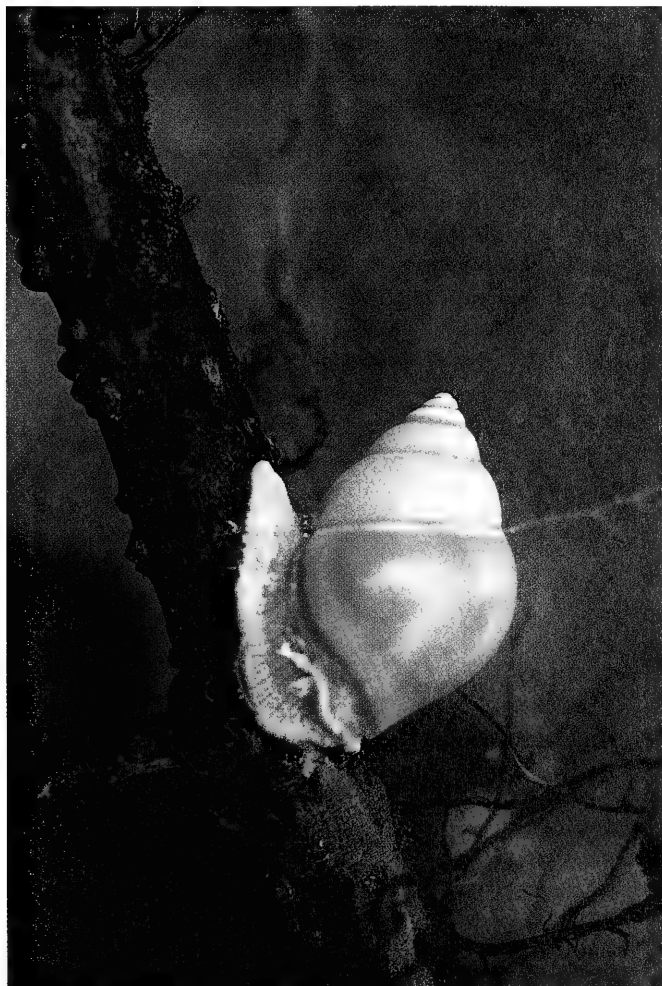


The green color of *Leptopoma undatum* is from the animal inside the shell. The operculum is yellow. Sabah - Sukau River Lodge.

Walked to Bukit Teresek for a view of the countryside — a steep trail, climbing about a thousand feet. In the distance we could see Gunung Tahan (2186m), the highest point in

Peninsular Malaysia. Along the trail, passed a colony of white headed gibbons. They made a lot of noise, but I didn't see any — they blended into the jungle background.

After lunch, a ten minute boat ride downstream to climb a steep, slippery bank and walk a half mile through open forest to the entrance of the Gua Telinga cave. It is not a real cave,



The green shell of *Amphidromus martensi* contains a yellow foot edged in white. Sabah - Supau.



Hemiplecta densa is over 40 mm in diameter. Sabah - Mt. Kinabalu.

but openings between collapsed limestone boulders. I did find the tramps, *Bradybaena similis* and *Lamellaxis gracilis*. *L. gracilis*, in the same family as *Subulina*, lacks the truncated columella, and is considered the most widely ranging of all landsnails. It is found in almost all tropical and semi-tropical regions.

While eating dinner in the outdoor dining area, saw a green-spotted three foot long Paradise Tree Snake. It climbed up a 4X4 post and then up a straight wall. It was remarkable. It is a rear-fanged snake and only mildly poisonous.

On our return to Kuala Lumpur we visited Batu Cave, a Hindu shrine. We entered the cave by climbing a staircase consisting of 272 steps, "guarded" by many long-tailed macaques. The adults are about 18" tall and they growled as we walked past. Maybe they knew we were not Hindus. The cave is huge, with many altars decorated with carved figures of stone and wood. On the ground in the cave I found two dead *Cyclotus perdix aquila*. This operculate has a low-spired 20mm rapidly expanding shell with an aperture free of the previous whorl, brown radial blotches, and a prominent breathing tube. The tube allows the snail, during the dry season, to pull its operculum over the aperture and still breathe through the tube.

Flew to Sabah on the island of Borneo. We were met by our guide Cede who took us by bus to the pier in Sandakan. We then boarded two launches for the hour and a half ride to

(continued on next page)



Microparmarion sp., a semi-slug, on an orchid plant. Sabah - Mt. Kinabalu.



Dyakia, a usually sinistral genus, is named after the native people, the Dyaks. Sarawak - Bako.

LANDSNAILS AND SCENERY IN MALAYSIA (continued from page 5)

Green Turtle Island (Seningan Island). The island is small and the accommodations are minimal. The temperature was 100° and the humidity was 98%. My room contained a cot, a covered mattress, a towel, and a fan but no window, a toilet, oriental type at floor level, down the hall, but no running water. After dinner we watched a turtle lay about 95 eggs. The eggs were collected and taken to the hatchery where they were reburied. At the hatchery the previously hatched turtles were collected and counted before we returned them to the sea. On the beach the following morning the jeep-like tracks of the returning females could be seen from the nests to the sea.

Returning by boat, we drove on the dirt road to Gomantong Cave, one of the sources of birds nests for bird's nest soup. The small, cup-shaped nests are made by swiftlets from mosses and feathers held together by the swiftlet's saliva. A very pleasant trail over limestone rubble winds between the small trees. The ground is strewn with many dead shells, including *Hemiplecta densa*, *Cyclotus iris*, and *Amphidromus martensi*. *H. densa* has a large (38-48mm) greenish-yellow shell with a spiral red band below the angular periphery. The empty shells are very fragile and are seldom found without breakage. *C. iris* ranged from 14-30mm. It resembles *C. perdix aquila* of the Peninsula except that the aperture is attached to the prior whorl and the breathing tube is inconspicuous. The *A. martensi* specimens exhibited variety. I collected six specimens, four unbanded with one sinistral and three dextral, and two more both banded and dextral. Along the bank at a stream crossing there were many live freshwater shells (Thiaridae). There are living quarters near the caves for the bird's nest collectors. The cave entrance is huge — 100' high and 75' wide, with guano, cockroaches and dung beetles covering the floor. At the cave entrance I collected snails, including *Alycaeus*, a 6-7mm helicoid operculate with the body whorl exhibiting a sharp constriction which produces a distinct change in the sculpture. I took soil samples from the limestone depressions which have yielded twelve tiny "species."

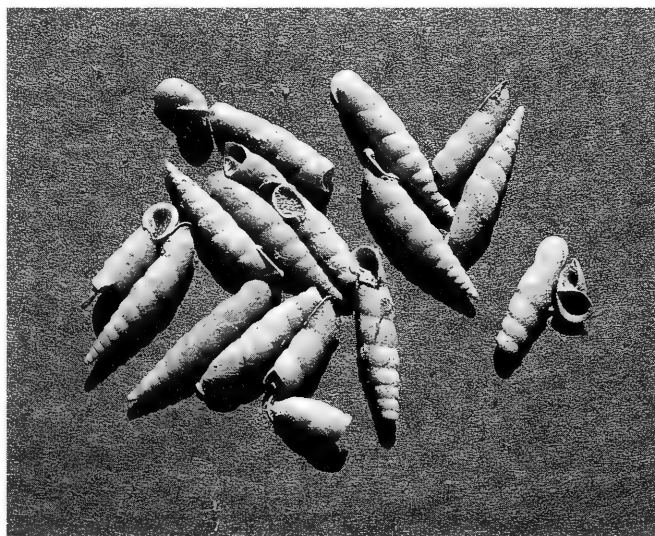
We continued by canoe to Sukua River Lodge at the junction of Menanggal and Kinabatangan Rivers. After getting settled, we took a boat ride up the Menanggal River to see the proboscis monkeys. They were numerous, but high up in the trees. I was glad I brought my 600mm lens. Our guide Cede had taken the beautiful pictures for the book, **Proboscis Monkeys of Borneo**. There are three characteristics of the proboscis monkey — 1) The males weigh about 20 kg, very heavy for a tree-dwelling animal, in fact one of the largest monkeys in the world. 2) They have enormous stomachs, twice as large as their nearest relative, and designed to digest leaves. This large stomach makes them look permanently pregnant — even the males! 3) Males have huge, pendulous and greatly expanded fleshy noses which overhang their mouths. A male needs to push his nose aside when eating. Early accounts reported that the monkeys actually held their noses while they jumped from branch to branch. From my observations this is not true! After dinner went for a night walk. Saw many insects, frogs and snails. Found *Leptopoma undatum*, *L. sericatum* and *Everettia*. *Leptopoma* are Prosobranchia. The unpatterned trochoidal shell of *L. undata* is almost triangular in outline. Its bright green color is the color of the animal, not the shell. *L. sericatum* is smaller, helicoidal, and has several spiral bands. *Everettia* is 8-25mm, and has a greenish-yellow low-spired shell with a rounded periphery and is narrowly perforate.



The Iban longhouse chief smiles approval to the dancers.



The genus *Chloritis* occurs from China and India to Central and South Australia and the Solomon Islands. Sabah - Damai.



Phaedusa borneensis is a member of the Clausiliidae, a sinistral family found in Europe, around the Mediterranean, Asia and South America. Sawawak - Fairy Cave.

Went for a boat ride after breakfast up the Menanggal River. While moving along, I spotted an *Amphidromus martensi* on a branch across the river. Our course was changed so that we could see the snail. Its dextral shell is yellow-green, and the animal has a white boarder on its yellow-brown foot. A short distance downriver our guide pointed out a reticulated python, the world's largest snake, and non-poisonous, coiled on an overhanging branch above our heads. There was nothing to

fear, he assured us. It is only nine feet long, and four inches in diameter. They can attain a length of thirty feet and weigh 250 pounds!

Drove to Sandakan, stopping at the Sepilok Orang-Utan (man-of-the-woods) Center to see a feeding. The orangs are the only Asian great ape. Tailless, large-faced, with long hairy arms, they are social and very affectionate, always holding or touching each other. One mother had her dead baby hanging around her neck.

The next day we flew to Kota Kinabalu. The peak's serrate summit was visible and was very impressive. Mt. Kinabalu is the highest peak east of the Himalayas at 13,455'. The summit is unusual for a granite mountain; where most granite summits are either rounded or pointed, Kinabalu is composed of a series of tall granite spires: massive granite is cut by well-defined, close-spaced vertical joints, and lacks joints in the horizontal direction, so differential weathering can give rise to granite needles. The age of Mt. Kinabalu granite is 10 million years (Miocene) and is intruded into Paleogene clastic and sedimentary rocks.

The height of Mt. Kinabalu is increasing at 5mm/year or 0.2"/year. If the granite formed 10 miles below the surface and the elevation increase rate was constant (5mm/yr), it would require 4 million years to erode 10 miles of overburden and for the summit to reach its present height. It is a new mountain! The mountain has over a thousand species of orchids, 26 species of rhododendrons and nine species of pitcher plants. The many endemic plants are due in part to the mountain's isolation. It is a high biological island surrounded by low, inhospitable environments.

We drove to the park and visited Pouring Hot Springs. Saw the sulphur pools and walked the trail to the canopy walk. The only snail seen was *Achatina fulica*. Next morning Mt. Kinabalu was in all its glory. To look from our camp at 4,500' to the summit at 13,455' in a horizontal distance of 6.5 miles is impressive — that's 1,600' per mile. We left at 8:30 and rode to the beginning of the Summit Trail at Timpohon Gate (6,000'). The trail is well constructed but steep. Walked past Carson's Waterfall in the dense forest from shelter to shelter: Pondok Kandis, at 6,500'; Pondok Ubah, at 8,874'; Pondok Lowi, at 7,500'. Here the vegetation becomes more mossy. We had left the rain forest and were now in a cloud forest. On to the fourth shelter, Pondok Mempoening, at 8,262', and finally, Layang Layang Staff Quarters, at 8,600'. Here were many species of orchids and pitcher plants (*Nepenthes*). There are seven shelters, to 12,500', but the fifth was high enough for me.

It is strange how the tip of the pitcher plant leaf can develop into a cup 5 or 6" deep and 4" in diameter. The pitcher plant captures its prey when the victim flies into the pitcher. Downward-aimed hairs and fluid excretion prevent the



Nepenthes villosa, a pitcher plant, from Mt. Kinabalu. The pitcher is a modification of the leaf tip.

victim from escaping. The plant possesses chemicals to dissolve the entire prey, hard parts and all. Wonder what prevents its own tissue from being dissolved?

The cloud forest presented many eerie visions, like the trail vanishing into the mist and trees standing in a sea of fog. The walk down was quicker than the walk up, but harder on the legs. Tired on arrival at the first shelter, my legs were even more tired on my return. Back at camp at about 5 p.m. after a long, tiring, delightful day, went snailing before bed; found *Bradybaena similis* and *Trachia*. *Trachia* has a perforate, depressed, spirally banded, shouldered shell.

After breakfast visited the Mountain Garden, a botanical garden at park headquarters. Saw many orchids and pitcher plants. Found a live green slug with a remnant of a shell on the leaf of the orchid *Phylogenia clementsi*. The snail is probably a species of *Microparmarion*. The genus is "on the road to slugdom."

We flew to Sarawak in the afternoon. Next morning visited Sarawak Museum built by Raja Brooks to house Alfred Russell Wallace's collection. There were even some landsnails. Afterwards

the museum hired a cab to take me to Wind Cave and Fairy Cave at Bau, about 40 miles south of Kuching. Wind Cave, with wooden walkways, is not accessible for collecting. Did find a few collecting sites — the park ranger helped me. He showed me a human jaw that had been uncovered during the construction of the walkway. The cave was used as a shelter in prehistoric times. Many of the empty snail shells were from large freshwater species, minus their apex — it was removed by striking it, in order to release the internal vacuum and allow the animal to be sucked out through the aperture. The entire process of striking, sucking and removal is quick — a single suck will do it.

Drove the short distance to Fairy Cave. The entrance, about 30 meters above the parking area, has steps with a 2" riser and a very slippery 4" tread, a wooden rail on one side, the cliff on the other. Found many empty snail shells at the cave entrance, including *Amphidromus similis*, *Achatina fulica*, *Phaedusa borneensis*, *Lamellaxis gracilis*, *Leptopoma*, *Opisthostoma*, and *Videna*. *A. similis* resembles *A. martensi* but has a few brown sub-sutural spots and the calluses are purple-brown. *P. borneensis* is a skinny (22mm long and 3.2mm in diameter) sinistral shell with a pointed apex, reflected lip and toothed aperture. *Opisthostoma* are tiny radially ribbed helicoid operculates. The aperture seems to have a mind of its own. It grows away from the shell and in the opposite direction — the most bizarre shell I've seen! *Videna* has a dextral, fragile, translucent 14mm lens-shaped shell. One specimen is sinistral. It sure looks like *Videna*. Will have to check on this.

(continued on next page)

LANDSNAILS AND SCENERY IN MALAYSIA (continued from page 7)

Stopped at Bau to see the Bukit Young Gold Mine, a large, deep excavation with a horizontal tunnel. The Malaysian man sitting across the aisle from me on the plane home was a geologist and the manager of the Bau gold mine — first operated by the British and abandoned prior to World War II. The excavation has filled with water, creating a lake into which the Japanese threw their ammunition and weapons at the end of the war. When the new manager took charge they drained the lake, but had to dispose of the weapons left by the Japanese. The mine is currently producing gold and expects to continue for a few more years. After the mining is completed, the area will be converted to a public park.

Next day went to Bako National park. I took the long (5.25km) Lintang Trail up the sandstone hill through wet forest to the flat surface on top. Here, many six-inch circles are cut in the sandstone, abundant, uniform, and not overlapping. If I didn't know better, I'd say they were formed by the exhaust of a small rocket ship. The sandstone drainage is poor and the area is like an elevated swamp. Pitcher plants are everywhere, on the ground and in the shrubs. Some are three inches and others are closer to six or seven. Also saw the carnivorous sundew. The walk back was long, hot and down — didn't seem we'd climbed that much. Found *Dyakia*, *Geotrochus labuanensis*, *Chloritis* and *Hemiplecta densa*. *Dyakia* is a sinistral genus named for the Dyak, a general term referring to all the indigenous non-Islamic peoples of interior Borneo. It is also the world's only bioluminescent-shelled landsnail. The low intensity yellow-green flash lasting about a half second is emitted from a luminescent organ in the head. *G. labuanensis* resembles a Chinese hat, about 16mm in diameter, 7mm high and triangular in shape, with a narrow red band just above and below the angular periphery.

We then went to Demai Beach near Kutching. After breakfast, went on the Jungle Trek. Started in wet forest and ended in dry forest. Saw a picturesque waterfall along the way. The stream was clear! Only stream I'd seen where the headwaters had not been logged. Saw a green pit viper along the trail edge, and the snails *Chloritis* and *Leptopoma undatum*. I like snails but they did not hold my attention like the three-foot long pit viper.

Our final adventure was a night in an Iban longhouse. It was just an overnight visit but it was the experience of a lifetime. The Iban are one of the Dyak tribes.

We left Kutching early for our two-hour bus ride to the Engkare River. Just north of the Kalimantan/Sarawak border at Ulu Ai lake damsite, we were met by our Iban boatmen for an hour and a half boatride upriver to the Sunok longhouse near the junction of the Stamang and Engkare Rivers. The 2' wide, 20' long canoe held three passengers, a driver at the stern, and a poleman in the bow.

Rain came down in torrents, soaking us to the skin — even ponchos were of no avail. Fortunately it was hot so it was not uncomfortable. There were many rapids as the chocolate-brown river — the extensive logging in the interior has greatly increased soil erosion — left the lake. Our outboard motor was just powerful enough to counter the current in one especially swift and narrow rapid. Passed the Iban boarding school, which accounts for the absence of school-age children at the longhouse.

We were greeted by the chief, 62 years old, with designs tattooed on his shoulders and back. Traditionally the Iban do not shake hands with visitors, but today shaking hands has become highly acceptable. We shook hands.

The longhouse is a condo-like "city" of 34 not necessarily related families, with a chief, shaman, etc., for each longhouse. About 150 yards long, the longhouse itself has a hall on one side, while the other is divided into rooms about 20 feet wide and 50 feet long. It is made of bamboo with mats on the floor and metal, bark and bamboo walls. The toilet, shower (consisting of a bucket), and wash basin are on the outside edge of the rooms. The toilet is oriental style with paper and a flush bucket. There is running water. The area is clean and bug free and the floor is dry.

After a greeting in which the chief prayed to the spirits for our acceptance as guests, we were given tuak (rice wine) and rice cakes. The response on drinking tuak is "oo ha!" — the louder, the better.



The shell of *Leptopoma undatum* is white when the green colored foot is absent. Sarawak - Bako.



Everettia and *Chloritis* occur together but they are in different families (Ariophantidae and Camaenidae). Peninsular - Kuala Lumpur.



The apex of the Thiaridae freshwater snails have been removed for easier access to the animal. Sarawak - Longhouse.

I asked Frederick, our guide, to inquire about their use of landsnails. A young man took me to his room to show me a pan containing many 3-inch freshwater snail shells. All of the empty shells had the apical whorls broken off. He would sell me the empty shells at 10 shells per ringet (\$0.40) but he threw in five shells more. Guess he felt sorry for someone wanting empty snail shells. They eat the animal and crush the shell for fertilizer in the dry rice fields. The snail is an intermediate host for the lung fluke.

Ate dinner in the chief's room, sitting on the floor in a circle. The bowls of rice, their staple food, are supplemented by chicken, fern fronds, spinach, bamboo shoots, tapioca leaves and pineapple spears. The beverages were tea and coke. They use their hands although silverware and water for washing hands were provided. Each diner is expected to help himself. It's best to take a small portion at first to determine if you want more.

After dinner came more tuak and tribal dances, with music by a woman striking a gong. The first dancer was a sparsely tattooed man in a headdress carrying a sword, followed by a woman in an Ikat blouse and skirt, then a warrior with a spear and wooden shield, and finally four masked figures who danced. Next it was our turn. The chief presented his headdress to one of us, who drank a glass of tuak and performed, then passed the headdress to someone else. Finally we presented our gifts of pencils and writing pads, 34 piles of them, one for each longhouse family.

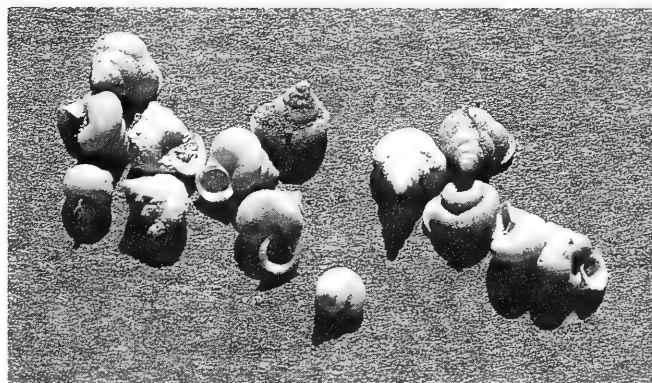
The two sleeping rooms for guests consisted of a central walkway with an elevated 1' platform on either side. Mattresses and covers were placed on the platforms, with a pillow, a blanket and mosquito netting.

Woke to the crowing of roosters. After a breakfast of eggs, rice, bread and more, we watched a cock fight demonstration. The Malay do not use spurs on the feet of the cocks like the Chinese. Next was a blowgun demonstration — a five foot tube with a sight at the top end; it is held with both hands near the mouth. I felt better with one hand halfway up the barrel as we shot at balloons. The poison for the darts, which we didn't use, is form the sap of the Ipoh Tree (*Antiaris toxicaria*).

The chief then took us on a nature walk, telling us how they used plants for food and medicine. The walk ended at 9:15 a.m. at the river above the large rapid. As we departed in our canoes, the chief shook hands with each of us and his last word was "Hello."



The operculate *Cyclotus perdis aquila* has a breathing tube near the aperture. Kuala Lumpur - Batu Cave.



The body whorl of the operculate *Alycaes fultoni* has a constriction before the aperture. Sarawak - Fairy Cave.



There is species variety in a soil sample from Gomantong Cave, Sabah.

COA '97 - THE SILVER EDITION

The Sanibel-Captiva Shell Club and The Bailey-Matthews Shell Museum request the pleasure of your company at the 25th Anniversary COA Convention to be held at South Seas Plantation, Captiva, Florida, July 13 through 18, 1997.

Accommodations will be in Villa units and can accommodate one to six people. Many shelling sites will be available for field trips, and there will be a dinner trip by boat to Cabbage Key, made famous by Jimmy Buffet for his "Cheeseburger in Paradise" song. Other attractions in the area are the Edison-Ford State homes, J.N. Ding-Darling Wildlife Preserve, the Sanibel Lighthouse, Center for Care and Rehabilitation of Wildlife, and The Sanibel-Captiva Conservation Foundation.

Captiva is located approximately 35 minutes from the Southwest Florida International Airport, located in Fort Myers. For more information contact Anne Joffe at 1163 Kittiwake Circle, Sanibel Island, FL 33957 or call (941) 472-3151, or fax (941) 472-3153.

From the HARPERS INDEX (*Harpers Magazine*, August 1996, p. 9): Maximum number of months humanity could survive without invertebrates: 6.

THE PUBLICATIONS DEPARTMENT

In the interest of keeping our readers up-to-date about their shell world, we like to draw your attention from time to time to a few other fine publications worldwide.

If you have never seen *La Conchiglia*, you're missing out on a lot. This ambitious and heavily illustrated shell magazine has been a fixture of the shelling scene for a long time. Started by Kety Nicolay and her husband Mario Angioy in 1969 it was originally in Italian. Later there were separate English and Italian editions, and the English version was titled *The Shell*. Through the years, most issues have been in parallel columns of the two languages, but have recently returned to separate language editions.

Today, Kety and Mario have retired and their daughter-in-law Maria Antonietta Fontana Angioy is the hard-working editor, assisted by her husband Paulo Angioy. They are giving a new look to the now-quarterly, and moving to make it more helpful to the novice. It now has a heavier cover, and more columns. Look to *La Conchiglia* for news of Mediterranean shells, yes, but its world-wide focus is well-known. Descriptions of collectible new species, book reviews, articles on shells and culture, and notes and news of all our favorite groups abound, interspersed with large, showy illustrations. Better translated than ever before, articles from the European shelling community (especially the collectors of Italy, always very active) South Africa, Asia, Australia and the U.S. round out this well-known and widely-read magazine.

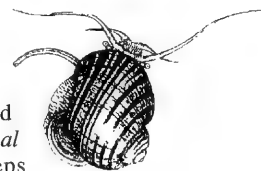
The latest number (April-June) contains, among others, an article on rediscovery of the volute *Athleta epigona* by Patrice Bail, a thorough and excellently done description of a new pecten, *Semipallium marybellae* from Guam by COA's Bret Raines, and descriptions of new species of *Trivia* and *Erato* from northern New Zealand (M.R. Hart), a new *Tivela* from South Africa (M. Lussi) another new *Trivia* from the Philippines (F. Lorenz, Jr.), and Tom Rice on the colorful subject of shell postage stamps. *La Conchiglia*, Via Focilide 31 - 00125 Roma-Axa, Italy.

Xenophora is another old favorite, not so well known as *La Conchiglia*, because it was for many years published only in French. Dual column translations for important articles became the rule in the late 80's and more English-speaking collectors found it useful. Beautiful photography and interesting articles on the more collectible taxa are the usual fare, along with some travel articles. However, we regret to see that a change in policy and the editorship has shifted the quarterly away from much English translation, making it less useful to those who read no French. Still, the excellent shell photos make it worthwhile even to them, and a recently distributed index expands its usefulness. The latest issue, with an article by Daniel Gratecap on the shells of Brittany and a beautiful center photo section of Brittany's shells by R. Le Neuthic

brings these shells into focus for us (if we can read French). In both French and English, E. Rolan and G. Raybaudi Massila "Zoom on Angolan Cones," with some superb cone photos. They are also republishing in French the two Emily Vokes articles on "Collecting Trophons in Argentina" from *American Conchologist*. *Xenophora*, BP 307, 75770 Paris, Cedex 16, France.

New in our mailbox is the more scholarly and less colorful twice-yearly *Bulletin of the Malacological Society of London* (number 27). The Malacological Society of London was founded in 1893 and its major publication is the venerable *Journal of Molluscan Studies*. *The Bulletin* keeps members regularly informed of events, publications, meetings and other news of import, and this issue contains an article on the discussion from the March Annual Meeting, "Microevolution in Molluscs" and another account on "Chemosymbiosis in Molluscs" from the March Joint Meeting of the Linnean Society and the Malacological Society. Also included were book reviews and a synopsis and a plate from the doctoral thesis of Tan Koh Siang, the Annual Award Winner, on the "Taxonomy of Thais and Morula in Singapore and vicinity". Altogether an instructive evening's reading. Malacological Society of London, Dr. D. Roberts, PhD, School of Biology and Biochemistry, The Queen's University, Belfast BT9 7BL, Northern Ireland.

The Strandloper, *Bulletin of the Conchological Society of Southern Africa* is now edited by Dr. Michael Cortie. Like the *Bulletin of the Malacological Society of London*, it is a newsletter format, printed on glossy stock, but there are often color photos and the photos and information on South African species make it important to any collector. Again, travel articles, cultural pieces and letters to the editor alternate with shell information, news and reviews. The latest issue your editor has received contains such pieces as a Zanzibar trip account, David Freeman's small piece on *Cypraea flaveola* and *C. labrolineata*, "Shells used in cameo carving" by Barbara Fouché and "Some Special Shells" by Lizeke van den Berg with some marvelous *Amalda*, *Gyrineum* and *Calyptraea*. There is also an editorial dealing with conservation problems in South Africa and citing COA's Resolution on Conservation and our presentation of the conservation question in the June and September 1995 issues of *American Conchologist*. *Strandloper*, 7 Jan Booysen Str., Annlin, Pretoria 0182, South Africa.

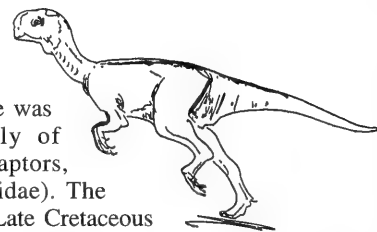


A PREHISTORIC MOLLUSCIVORE FROM MONGOLIA

by Douglas N. Shelton

Aside from the study and collection of mollusks I also have a fascination with dinosaurs and other fossils. While scanning a dinosaur book given to me by a family member I discovered a bit of trivia sure to fascinate any collector of fossil shells. An unusual dinosaur known as a Conchoraptor, *Conchoraptor gracilis*, was terrorizing ancient mollusks in Mongolia long before the Velociraptor rose to fame in Michael Crichton's *Jurassic Park*. This small dinosaur is thought to have dined on "mollusks and other sources of meat." Its size is estimated to be 1.5 meters long or less.

This toothless carnivore was a member of the family of dinosaurs known as Oviraptors, "egg-thieves." (Oviraptoridae). The Conchoraptor is from the Late Cretaceous and is known only from a small skull which measured about 10 centimeters (4 inches) in length. It is believed to have possessed a horny beak used for crushing mollusks or eggs.



Reference:

Lessem, Don, and Donald F. Glut. 1993. *The Dinosaur Society's Dinosaur Encyclopedia*. Random House, Inc. New York. 533 pp.

LARGE CACHE OF DIAMONDS FOUND ON FLORIDA BEACH

SPI Wire Service

by Linda Brunner

Three hundred and twenty-six diamonds were found on St. Pete Beach between July 14 and 19, 1996, all sparkling for the Conchologists of America Annual convention. Most of these gems were set in the beautiful TradeWinds resort, but all did not stay there the entire week. Some were reported in different parts of the Gulf of Mexico, apparently searching for sea shells. I know of one, John Chesler, who found a beautiful golden *Murex rubidis*. Others were observed at the Florida Aquarium gazing at fish, birds, and mollusks. One of these glittering gems even had a cheek-to-cheek confrontation with a Roseate Spoonbill.

The diamond of greatest karat weight was called Betty Lipe. She was a gem of a leader and chief sparkler of this fabulous week. Betty led a group of local diamonds in providing conventioners with activities that outshone everything else in the area. Our gratitude for the week goes not only to Betty but also to Eleanor Rothoff, Florence Kuczynski, Rob Geater, John and Cheryl Jacobs, Bob Lipe, Dave Green, Doris Underwood, Phil Poland, Elna Bozarth, Mary Jane Heard, Yvonne Bequet, Bobbi Peabody, John Parkhurst, Ben and Josy Wiener, Sharon Snyder, Peggy Williams and all the other gems of the St. Petersburg Shell Club who were too shy to see their names in print.

The week was filled with a treasure chest of activity and information. There were field trips to local shelling spots, a trip on the Environmental Explorer to observe marine life forms, and a trip to the Florida Aquarium. Programs found Bob Lipe looking at diamonds from the past, Jim Brunner and an illustrious panel peering into the future of shell collecting, and Amy Edwards exploring a new frontier; the Internet. In between all this Charlotte Lloyd presented live Caribbean shells, Gene Everson took us to South Africa, Alice Monroe hypothesized on shell patterns, Rich Goldberg flew us to Indonesia, Betty Jean Piech introduced us to mighty tritons, Dr. Jose Leal plunged us into the deepest Atlantic, Dr. Donald Bosch showed us the Middle East, Hank Foglino let us explore the hazards of the intertidal zone, Debra Ingrao put us close to *Octopus vulgaris*, and a panel of publicists told of methods to use in promoting shell clubs and their activities. From the welcome party, to the great door prizes, to the bourse, to the banquet, Diamonds in the Sun was fantastic!

During the annual meeting President Linda Koestel thanked last year's board for their contributions in helping to keep COA running smoothly and announced that the board of directors recommended an increase in dues. The membership promptly voted in that increase without discussion. Linda presented the slate of officers for the coming year which was approved by the members. The new officers are: President David Green, Vice president Linda Brunner, Secretary Jean Roe, Treasurer Bobbie Houchin, and Trustee Rosalie Taylor. Mary Owen gave her annual financial report which showed a balance as of June 30, 1996, of \$21, 720.25. Of this amount there is 1 money market, 2 CDs and the balance is in checking.

Dr. Gary Rosenberg announced the winners of COA-sponsored grants. The first Walter Sage Memorial Fund grant



Who are those Pirates of the Caribbean at the St. Petersburg Welcome Party? Are they searching for Diamonds? Photo by John Parkhurst



Up close and personal with one of our fellow guests. Photo by Kevan Sunderland

went to Ross Gunderson and Russell Minton of the University of Wisconsin-Parkside for work on *Puperita pupa* and *Puperita tristis*. We look forward to hearing from these recipients in *American Conchologist* or at a future COA convention. Bobbie Houchin reported an increase in membership and thanked Jose and Marcus Coltro for their distribution of membership forms which was a significant contribution to the increase. Donald Dan reported that COA awarded 21 plaques for display excellence during the past year. Sixteen of these were in the United States and 5 were abroad. Anne Joffe gave a scenic and informative report on the 1997 convention site. Look for upcoming articles for details of next year's meeting.

There was a new feature at the banquet. Each attendee was asked to complete a questionnaire evaluating present convention lengths, time of year, placement of field trips during the meeting, and time of week to hold the meeting. Your leaders want you to be able to attend the conventions at your convenience. Look for the results in *American Conchologist*. Diamonds were not all that glittered at this convention! The Sage family generously donated Walter's fabric to COA and wow, he had some sparkling yardage! President Linda Koestel announced at the banquet that sales

(continued on next page)

COA wishes to thank Ruth Ann Sparlin, who served ably as Parliamentarian at the COA convention board and business meetings.

Grateful thanks from the Lambis Group and all the rest of COA go to Wayne Harland and Kevin Smith. Wayne made computer equipment available for the Conch-Net Internet demonstration and program, and Kevin transported the equipment and set-up and operated the equipment during the demonstration program.

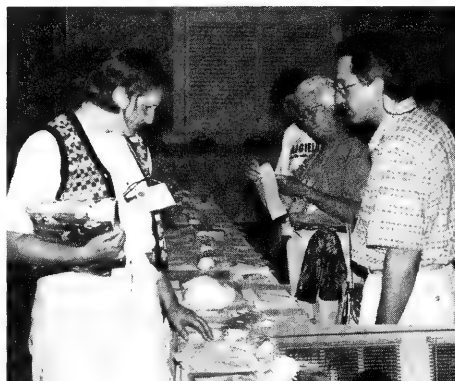
CONVENTION 1996

(continued from page 11)

from the fabric for the Walter Sage memorial Fund totaled over \$4,000 and that more will be at next year's convention.

Incoming President David Green asked more of us to serve. While some changed jobs, others are new to the board. Newcomers to the Board of Directors are Beverly Deynzer as Historian and Jim Brunner as Financial Director. A new committee that is keeping COA on the cutting edge of communication is the Lambis Group. These are the people who author and maintain the newest diamond in the COA tiara; this is the Conch-Net, our COA home page on the Internet, and also Conch-L, the COA list serve. This illustrious band of computer addicts includes Richard Goldberg, Dr. Thomas Watters, Dr. Emilio Garcia, Linda Koestel, Debbie Wills, John Calderia, Lynn Scheu, Dr. Gary Rosenberg and Amy Edwards. Amy will be the liaison with the board to report on the workings of this group for the coming year. If you haven't visited the site, you're missing a treat. If you don't know how, ask any 11 year old or a friend who was at the convention.

So you missed this sparkling event? Do you feel left out? Want to be there next year? Just polish your silver and prepare to shine at the 1997 convention, COA's Silver Anniversary celebration at Captiva Island.



John and Judy Lewis Caldeira of Dallas check out the jewels on Silent Auction tables. Photo by John Parkhurst

John and Cheryl Jacobs, two of our very special hosts.

They made it all run smoothly. Here they're giving Ruth Ann Sparlin her silent auction purchases. Photo by John Parkhurst



Travis Payne writes a check for his entire life's savings at the fabulous COA Auction. Photo by John Parkhurst

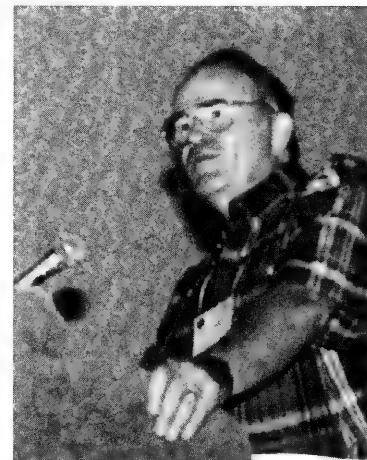


Doris Underwood (and Betty Jean Piech) sold Walter Sage's shell fabric and shirts to benefit the Walter Sage Memorial Award Fund. Didn't find that pattern you were looking for? There'll be more next year. Photo by John Parkhurst

Linda Koestel was so glad to pass the gavel on to our new President that she bestowed a crown upon Dave. Photo by John Parkhurst



William Zinsmeister did a real gem of a talk on "Fossil Collecting on an Island in the Antarctic." Photo by John Parkhurst



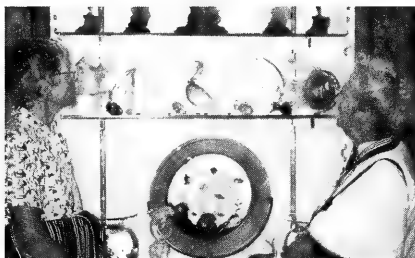
Plate's-eye view at the Club-Rep Luncheon. Josy obviously wasn't paying attention to the program! Photo by Josy Weiner



Shell collecting hopefuls scour the shoreline on the "Shallow Water Collecting Trip." photo by Fay Mucha



The Snorkeling Trip to Egmont Key. Photo by John Parkhurst



Biddy Dean and Georgette LaForet admiring wares at the Aquarium gift shop. Photo by Gertrude Moller



Window peeping, guys? Really! What could you be thinking of? Bourse Fever??? But you can't see much yet. Isn't that right, Sue Hobbs? Photos by John Parkhurst



Fay Mucha snaps a picture of the backs of our convention chairmen, Betty and Bob Lipe, at the banquet. Why do that, Fay? That's Jose Leal, new Director of the Bailey Matthews Museum, to the right of Betty. Photo by John Parkhurst



During some free time, "The Berg Brothers" mug for the camera: Right to left: Rich Goldberg, Gary Rosenberg, and Kevan "Sunderberg." photo by Linda Sunderland



Old Board. "Hank, wake up! Ruth Ann, pay attention! Don Dan, you stop that! Bobbie, he said to move in close!" That's (back row, from left:) Ruth Ann Sparlin, Doris Underwood, Mary Owen, Dave Green, Betty Lipe, Bud Rogers, Lucille Green, Rosalie Taylor, Jean Roe (seated:) Hank Foglino, Linda Brunner, Linda Koestel, Don Dan, Lynn Scheu, Gary Rosenberg, and Bobbie Houchin. Photo by John Parkhurst

New Board and a few new faces, all behaving nicely for the camera: (from left, standing:) Amy Edwards, Hank Foglino, Lynn Scheu, Dave Green, Betty Lipe, Linda Brunner, Jim Brunner, Jean Roe, Lucille Green, Bobbie Houchin (seated:) Rosalie Taylor, Gary Rosenberg, Don Dan, Betty Jean Piech and Linda Koestel. Photo by John Parkhurst



1996 COA GRANT RECIPIENTS ANNOUNCED

The Conchologists of America annually awards financial grants for worthy projects in malacology to deserving post-graduate students and professionals. Grants awarded since the inception of the program in June, 1985 total \$42,060.00. The 1996 COA Grants of \$8,900.00 bring this total to \$50,960.00 with grants to fifteen proposals (sixteen workers). Funding for these grants comes from the proceeds of the COA Annual Auction.

Grant recipients are recommended by the COA Grants committee, consisting of Dr. G. Thomas Watters, Dr. Henry Chaney, and Dr. Gary Rosenberg, Chairman, and are approved by the COA Board of Directors at the Annual Meeting. The recipients for 1996 are as follows:

Ms. Amy R. Baco, Department of Oceanography, University of Hawaii, for her work on: "Structure, succession and phylogenetic affinities of the unusual molluscan assemblage surrounding whale skeletons in the deep sea." Her Award: \$500

Mr. Scott Bauman, Marine Laboratory, University of Guam, for his study of "Extinct and extant land snail faunas of the southern Mariana Islands." His Award: \$575.00

Ms. Heather Bennett, Department of Biology, Indiana University of Pennsylvania, for "Histology and histochemistry of the pedal glands of North American species of *Solemya* (Bivalvia: Cryptodonta)." Her Award: \$600.00

Mr. Paul A. X. Bologna, Marine Environmental Consortium, for his project entitled: "Molluscan distribution within and among seagrass habitats." His Award: \$600.00

Mr. David C. Campbell, Department of Geology, University of North Carolina for his: "Radiation and convergence in the Bivalvia: a comparison of morphological and molecular evidence." His Award: \$600.00

Mr. Daniel Geiger, University of Southern California for a project on: "The mineralogy of abalone shells in a total evidence cladistic analysis of the family." His Award: \$650.00

Dr. Ross W. Gundersen and Mr. Russell Minton, Department of Biological Sciences, University of Wisconsin-Parkside for a study on color patterns, "Do stripes equal spots: *Puperita pupa* and *Puperita tristis*." Walter Sage Memorial Award: \$375.00

Ms. Lisa Hadway, Pacific Biomedical Research Center, University of Hawaii for her "Inventory and assessment of the molluscan fauna in the state of Hawai'i's Pu'u I Umi Preserve on the Island of Hawai'i." Her Award: \$800.00

Mr. Larry J. Hyde, \$750.00, Texas A&M University, for the "Final phase of field work to complete thesis research on molluscan distribution and ecology on Stetson Bank, northwestern Gulf of Mexico." His Award: \$750.00

Ms. Katharina Noack, Department of Ecology and Evolution, State University of New York for a study of "Molecular phylogenetic relationships of flabellinid nudibranchs." Her Award: \$600.00

Mr. Matthew P. Parry, Department of Oceanography, University of Hawaii for "Magnetoreception in squid as a mechanism for orientation in the open ocean." His Award: \$700.00

Ms. Tamara K. Ross, Ecology & Evolutionary Biology, Iowa State University for a study of "The genetic structure of the Iowa Pleistocene snail, *Discus macclintocki*." Her Award: \$800.00

Mr. Jonathon R. Stone, Department of Zoology, University of Toronto for his investigation of the "Evolution of *Lambis* and trajectories through morphospace." His Award: \$250.00

Ms. Kelly A. West, Department of Earth and Space Science, University of California, for a study of the "Morphological and molecular diversification of the thiarid gastropod species flock of Lake Tanganyika, Africa." Her Award: \$500.00

Ms. Michelle D. White, Moss Landing Marine Laboratories, for "Factors affecting the distribution and abundance of *Nuttalina* spp. along the coast of Central California." Her Award: \$600.00

COA BOARD OF DIRECTORS 1996-1997

President: **Dave Green**, Houston, TX

Vice-President: **Linda Brunner**, Southport, FL

Secretary: **Jean Roe**, Portland, TX

Treasurer: **Bobbie Houchin**, Louisville, KY

Trustee: **Rosalie Taylor**, Austin, TX

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COA Awards Director: **Donald Dan**, West Friendship, MD

Educational Grants Director: **Dr. Gary Rosenberg**, Philadelphia, PA

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Special Committee/Nominating Committee:

Chairman **Larry Stiles**, Fern Park, FL

Eleanor Hillman, Indianalantic, FL

Glen Deuel, Huntsville, AL

THE WALTER SAGE FUND

The Walter Sage Memorial Fund is an endowed fund for scholarships, begun in 1995, shortly after Walter's untimely death from cancer. The Walter Sage Fund has increased dramatically in the past few months as a result of several contributions and the sale of a portion of Walter's shell fabric at the convention in July.

The first Walter Sage Memorial Grant was also awarded in July, to Ross Gunderson and Russell Minton of the University of Wisconsin-Parkside for their work on the color patterns in *Puperita pupa* and *Puperita tristis*, "Do Stripes Equal Spots?" The current tally, after paying the first Walter Sage Memorial Grant is: \$8282.00

Should you wish to contribute to this worthy cause, your contribution will be fully tax deductible. Make your check payable to The Academy of Natural Sciences of Philadelphia and send it, along with a cover letter of explanation, to Dr. Gary Rosenberg, Department of Invertebrates, Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103-1195.

CONCHATENATIONS

by Gary Rosenberg

Mollusckque?

Malacologists and conchologists often wonder whether "mollusk" or "mollusc" is the correct or preferred spelling of the vernacular name for the phylum Mollusca. A debate on the subject appeared in *Hawaiian Shell News* from April to July of 1993. Stu Lillico posed the question (April, p. 12). Dr. Robert Cowie (May, p. 4) stated that the American spelling "mollusk" was a recent change from "mollusc" used elsewhere in the world, and Richard E. Petit (July, p. 6) demonstrated that early British and American authors both used the spelling "mollusk," contrary to general assumption. Independently, a similar debate raged on the Mollusca discussion group on Internet from September 26 to October 6, 1993 (URL <http://ucmpl.berkeley.edu/mollusca.html>). Attempting as usual to avoid undocumented opinions, Dr. Barry Roth commented that to properly understand the significance of the use of "mollusk" or "mollusc," we need more information on the distribution of the two morphs in time and space. I followed Barry's suggestion, posting to the discussion group my observations and conclusions, which form the basis of this article. I've also incorporated some of Dick Petit's findings, and additional items I've discovered since.

The *Oxford English Dictionary*, 2nd edition (*OED*) in its entry for "mollusc," records the first use in English as "mollusque" in 1783. The entry also records the spelling "mollusk" in *Penny Cyclopaedia* vol. 14 in 1839; the first "mollusc" is by F. Francis in his book *Angling* in 1867. So, on the basis of priority in the *OED*, it appears that "mollusk" is older than "mollusc." The first appearance of the word mollusc in a book on angling, however, is suspicious, and a quick browse through the stacks of my institution's library found several earlier uses of "mollusc": T. Spencer Cobbold, *The Treasury of Natural History, or a popular dictionary of zoology*, 6th ed. (1862); D. M. Reese, *Elements of Zoology, or a natural history of the animals* (1849); and G. B. Sowerby, Jr., *A Conchological Manual*, p. 23 (1839). This leaves both "mollusk" and "mollusc" dating from 1839. "Mollusk" can be pushed back to 1837, however, in the *Penny Cyclopaedia* vol. 7 (p. 434, entry for Conchology).

I submitted my findings on "mollusk" versus "mollusc" to the editors of the *Oxford English Dictionary*, who replied that searching the CD ROM version of their dictionary revealed quotations under other entries documenting earlier uses of both spellings. "Mollusc" appears in 1833 in Charles Lyell's *Principles of Geology* III, p. 230, and "mollusk" in 1836 in Robert B. Todd's *Cyclopedia of Anatomy and Physiology* I, p. 712. Since then, I've found "mollusk" in 1832, in Richard Owen's *Memoir on the Pearly Nautilus*, p. 29, where it is a direct translation of "mollusque" from an article by Cuvier. So, at the moment, "mollusk" (1832) has one year's priority on "mollusc" (1833), but earlier instances of both might yet be found.

The word "mollusk" probably was coined in response to growing acceptance of Cuvier's classification as set forth in his great work *Regne* (note that the e in *Regne* is an accent grave - back-angled) *Animal* (1817) which expanded the concept of "Mollusca" to include the bivalves and gastropods with the cephalopods. Possibly the spelling "mollusk" and "mollusc" have independent derivations. "Mollusk" as used by Owen

(1832) is clearly an Anglicization of "mollusque," whereas "mollusc" could be a noun form of "molluscous" or a vernacular singular for the plural "mollusca." The only source I examined that used "mollusque" as an English word was Isaac Lea (1828, *Transactions of the American Philosophical Society* III, p. 260), again taken straight from Cuvier.

Although "mollusk" and "mollusc" both date from the 1830s, "mollusc" is the rarer word at least into the 1870s. Almost all British conchologists used the spelling "mollusk" until the 1860s: Swainson (1840), *A Treatise on Conchology*; Brown (1844), *Illustrations of the Recent Conchology of Great Britain and Ireland*; Johnston (1850), *An Introduction to Conchology*; Forbes & Hanley (1853), *A History of British Mollusca*; Reeve (1860), *Elements of Conchology*; Jeffreys (1867), *British Conchology*; Woodward (1851 ["mollusk" p. 31, 36, 44; "mollusc" on p. 18]), *Manual of the Mollusca*. Huxley (1877) even used "molluskigerous." Sowerby seems to be the only major author who favored "mollusc," although he used the word rarely. Some authors avoided the issue (e.g. Fleming and J. E. Gray) by using "Mollusca" or "molluscous animal" rather than "mollusk" or "mollusc." British malacologists probably started favoring "mollusc" in the 1870s: *The Quarterly Journal of Conchology* (vol. 1, 1874-1878), which became *Journal of Conchology*, used that spelling. Another possible influence is Charles Darwin, who used "mollusc."

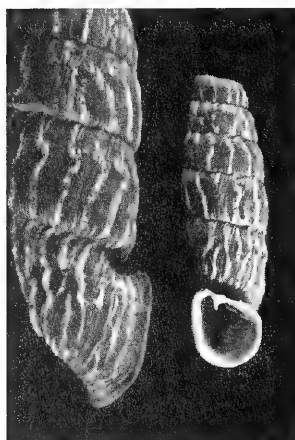
British popular works on conchology also favored the spelling "mollusk": M. Roberts (1851), *A Popular History of the Mollusca*; M. S. Lovell (1867), *The Edible Mollusks of Great Britain and Ireland with recipes for cooking them*; [E. Mayo] (1846), *Lessons on shells* as given to children between the ages of eight and ten, in a *Pestalozzian school, at Cheam, Surrey*, 3rd ed. (The first edition used "mollusca"; I haven't seen the second edition). Among the popular works I've examined, only A. Catlow (1843), *Popular Conchology* used "mollusc." *The Imperial Dictionary*, John Ogilvie, ed. (1852), published in Edinburgh and London lists "mollusk" with no alternate spelling.

Today it is well established that "mollusk" is the American spelling, and "mollusc" is the British spelling. For example, the British *Collin's Dictionary of the English language*, 2nd ed. (1986), gives "mollusk" as the U.S. spelling of "mollusc." *The Columbia Encyclopedia*, the standard American one volume encyclopedia (3rd ed., 1963), doesn't even mention an alternate spelling of "mollusk." "Mollusk" first appears in one of Noah Webster's dictionaries in 1854. The alternate spelling "mollusc" is not listed until 1961 (3rd unabridged edition). The first dictionary published in the United States that mentions "mollusc" as an alternate spelling of "mollusk" appears to be *The Century Dictionary and Cyclopedia* (1889). There are of course American works that use the spelling "mollusc" before 1900, but they are rarities, e.g., *Zell's Popular Encyclopedia* (1871), published in Philadelphia.

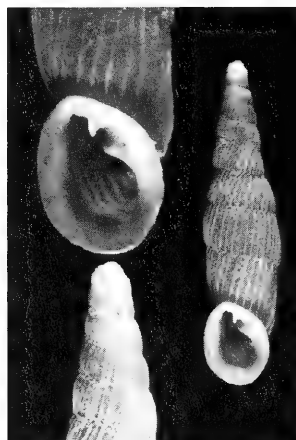
So, which is correct, "mollusk" or "mollusc"? I favor "mollusk," because it is formed in accordance with accepted standards of English orthography. Many English words end in -sk, but only a few end in -sc. The *OED* includes five: disc, fisc, lantisc, panisc, and subfusc, all of which have variant or preferred spellings ending in -sk. "Disk," from Latin discus, is preferred to "disc": the *OED* says "An earlier and better spelling is disk, but there is a tendency to use disc in some

RARELY ILLUSTRATED LAND SHELLS

by Richard Goldberg



Andinia taczanowski (Lubomirski, 1879). Clausiliidae. 25mm. Bambamarca, northern Peru; at 2800 meters a.s.l.



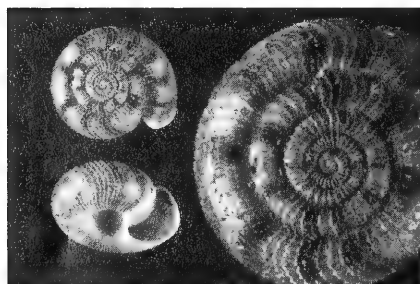
Siciliaria crassicostata (L. Pfeiffer, 1856). Clausiliidae. 22mm. Mt. Cofano, Sicily, Italy.



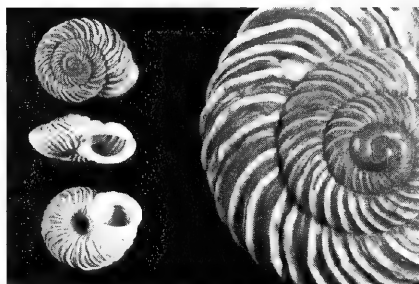
Cristataria (Strangulata) sahyounensis (Pallary, 1939). Clausiliidae. 18mm. Qalaaat Sahyun, west Syria. 18mm.



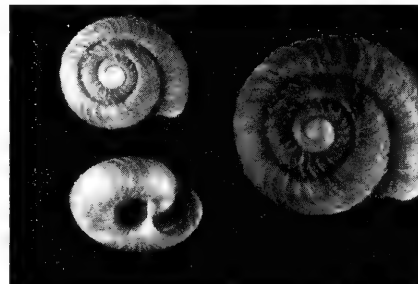
Cristataria (Strangulata) strangulata (Ferussac, 1821). Clausiliidae. 18mm. Nahr el Kalb (Dog River), Lebanon.



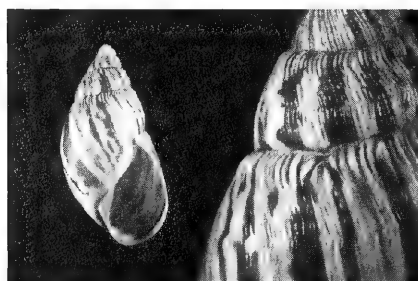
Suteria ide (Gray, 1850). 5mm. Opotiki, Bay of Plenty, New Zealand; type species of genus.



Pleuroxia oligopleura (Tate, 1894). Camaenidae. 16mm. Nullarbor Plain, Western Australia.



Himeroconcha rotula intercedens Quadras & Moellendorff, 1894. Charopidae. 4mm. Guam.



Bothriembryon cf. notatus Iredale, 1939. Bulimulidae. 21mm. Groper Bluff, Wray Bay, near Pallinup River, south Western Australia.

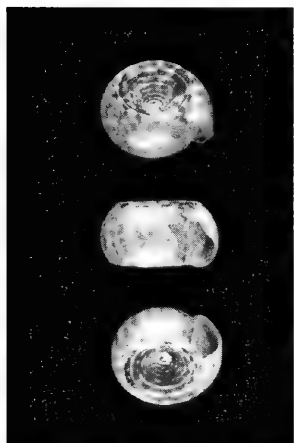


Placostylus ophir Clench, 1941. Bulimulidae. 55mm. Malaita Island, Solomon Islands. Paratype.



Naesiotus wolffi Reibisch, 1892. Bulimulidae. 15mm. Santa Cruz Island, Galapagos.

The intent of these centerfolds is not necessarily to distinguish among valid and invalid species, but to provide illustrations of taxa not popularly available, for the information of the collector.



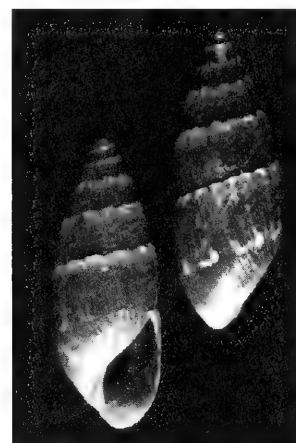
Diplomphalus cabriti (Gassies, 1858). Rhytididae. 8mm. New Caledonia; note concave spire and umbilical area.



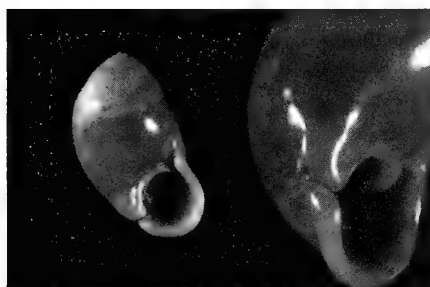
Oreohelix haydeni (Gabb, 1869). Oreohelicidae. 20mm. Weber Canyon, Utah, U.S.A.



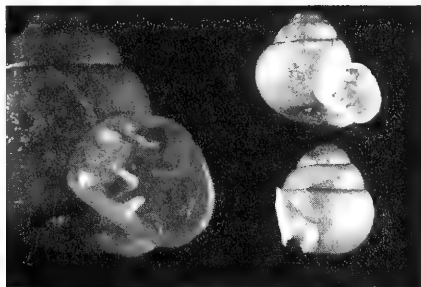
Subzebrinus fultoni (Moellendorff, 1902). Enidae. 17mm. Tibet; sinistral.



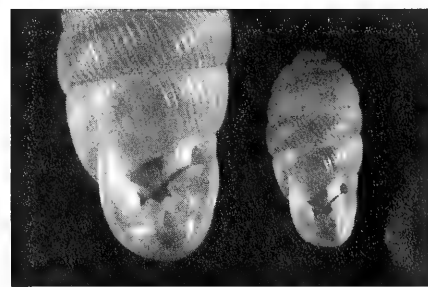
Chilonopsis subplicatus (Sowerby, 1844). Subulinidae. 15mm. St. Helena Island.



Pupina papuana (E.A. Smith, 1897). Pupinidae. 8mm. Biak Island, northwest Irian Jaya, Indonesia (Western New Guinea).



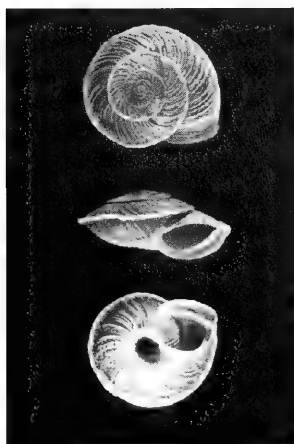
Tomigerus (Digerus) cumingi "Newcomb" Pfeiffer, 1849. Odontostomidae. 4mm. Belem, Para State, Brazil.



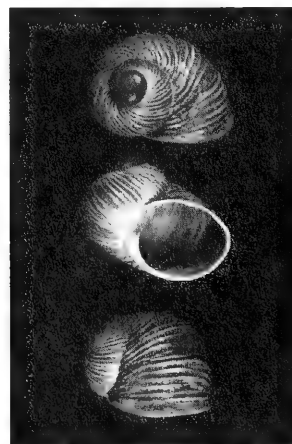
Gulella adamsiana impervia (Melvill & Ponsonby, 1896). Streptaxidae. 6mm. Natal, South Africa.



Diaphera moreleti (Hidalgo, 1889). Streptaxidae. 12mm. Busuango Island, Philippines.



Caucasigena (C.) vengarteni (Lindholm). Helicidae. 18mm. Ardon River, Savernaja Osetia, Caucasus, Republic of Georgia.



Idomela subplicata (Sowerby, 1824). Helicidae. 30mm. Ilheu de Baixo, Madeira Archipelago.

In the interest of widening our shelling horizons, we have two new columnists from outside the U.S. Jose Coltro of Sao Paulo, Brazil brings us an insider's view of an ecological problem in Brazil that is affecting landshells, as well as the environment. Franck Frydman of Paris, France, debuted in the March issue. Here he opens a controversial subject for us all with his views on trends in the European shell bourse.

Our Brazilian Connection: BAD NEWS FOR BRAZILIAN LAND SNAILS

by Jose Coltro Jr.

During the last eighty or ninety years, Brazilian land shells have been almost forgotten by most biologists and collectors. Abbott listed most of them as "extinct" in his *Compendium of Landshells*. Since the 1910 papers by von Ihering, or even before, with Pilsbry's work, the studies on many species were done through an occasional expedition to the Atlantic Rain Forest — probably the richest forest in the world.

When the Portuguese arrived in Brazil, in 1500, almost all the Brazilian coast from Rio Grande do Norte to Rio Grande do Sul were densely covered by an incredible forest. There they found a tree that they called "pau-brasil" (pau = wood, brasil = fire) and they used this name for the new land. The trees were perfect for boats and to produce a kind of pigment. Immediately the Portuguese and others (especially French pirates) started to export large quantities of this "pau-brasil," plus mahogany, jacaranda, and others. It was the beginning of the destruction of the Atlantic Forest. In the 1500's the Portuguese colonization brought thousands of people for agriculture. They planted sugar cane widely all along the coast and took down more of the forest. In the next centuries other crops — coffee or corn, even wood exportation — destroyed more than 2 million square kilometers of this rich forest.

Today less than a half million square kilometers resist man's destruction. Most of this forest was preserved in state parks in Sao Paulo State and in large cacao farms in Bahia State.

Bahia is the most important landshell province in all Brazil, and one of the richest in the world. There are a large number of species, most of them plentiful in terms of specimens. But since the beginning of this century, species like *Neobeliscus calcarius* (Born, 1778) and *Polygyratia polygyrata* (Born, 1778) have not been found. In 1990 we decided to try to explore some cacao farms and we found a live specimen of the "extinct" *Obeliscus obeliscus* (Moricand, 1833). In the following year we sent an expedition to this area; our people were able to find a large quantity of the "extinct" species after decades of their being unobtainable to collectors worldwide. We sent specimens also to two of the best Brazilian Malacological Museums — our National Museum, in Rio de Janeiro, and the Zoological Museum of the University of Sao Paulo. Finally the anatomy of most of these species was studied. We felt they were securely protected because most of these species live in forest that protects the cacao farms. The cacao tree needs a lot of shade to produce the fruits, so farmers try to protect the natural forest to provide this shade.

But since last year a plague has been attacking the cacao tree — the local farmers call it "vassoura de bruxa" ("witch broom"), a fungus that destroys the tree; there are no easy treatments for it, except to cut the tree! Large number of farms are losing the cacao trees and farmers have begun exchanging cacao culture for that of bananas or sugar cane. The original forest that protects the cacao, and the flora and fauna besides, is being cut down every day.

Some of our people are not finding many of the good spots for collecting now — where they found a wonderful forest two years ago, now they encounter only sugar cane or bananas. Even worse, the area has been treated by agricultural poisons to protect the new crops and thousands of dead shells were found, no live ones!

The Brazilian government is setting scientists to the task of eliminating this plague, so that the cacao culture can maintain this part of Brazil as a nice link between man and nature. If the cacao trees disappear, the interdependence of the forest and the cacao crop will vanish too, new crops will continue to be planted and the forest will no longer be needed. About 5 million people live in this area — most of them owe their survival to this cacao crop. To solve their social problem the farmers will have to choose between a new crop or the forest. The government knows that it is very important to keep the forest, but they also know that they have to help the people who live in this area. If in these next few years a solution does not appear, the forest will disappear and Abbott will have been right to use "extinct" for these species.

FRANCKLY SPEAKING... From Collection to Recollection in Old Europe

by Franck Frydman

In France, as in the U.S., amateur shelling can be considered from two different points of view in the ways it builds up a collection. Some French collectors show a strong interest in local and European species, but the majority reserve their passion for tropical species. Many overseas countries and territories are as remote and sometimes as difficult to explore for the French as any tropical country for any foreigner. One might think it is easy for a Frenchman to get shells from French Polynesia or Reunion; not so, as overseas French collectors are scarce except in New Caledonia, few are willing to exchange by mail, and most are interested primarily in their local shells. So we purchase. Or we trade.

Cowries, cones, volutes and murex are more popular with us than other groups, too often called "little groups" with some condescension by those who collect the main, and more expensive groups — but "De coloris et gustibus non est disputandum." No? One should collect what one likes.

Overseas many collections have a local orientation along with a systematic one; in our mother country there are more systematic collections. Few French collectors collect shells by themselves; even though diving and reefcombing abroad are getting more and more common, finding uncommon-to-rare shells remains a privilege of the few collector-divers who know where and when to look for this or that. Since our French collections mainly consist of purchased or exchanged shells, the standard of quality is high (sometimes too high for species which simply cannot reach the F++ grade); the self-collectors may be less demanding of quality, but are more sentimentally attached to what they fished themselves.

De Gaulle said that it was almost impossible to rule a country where there are 400 different cheeses...the French are extremely individualistic, and even when they belong to a shell club (or rather to THE French club, for there is only the one), sharing a common passion is far from sufficient as a basis on which to share shells, even if not by mail. (Personally, I love exchanging and find more pleasure in it than simple purchases.) My compatriots often content themselves with paying their dues, reading their newsletters and attending the shell bourses, but retracting into their shells between meetings. I am one of the minority who regret this absence of club spirit so common in the

3, Rue Dupuis, 75003 Paris, France

U.S. and Australia. There remain other persistent followers of shell exchange like me, even if sometimes an exchange can be extremely long and boring or, happily infrequently, dishonest.

Unfortunately, purchase is the most common way of increasing a collection in France, though not so 12-15 years ago. Having collected for about 20 years, I feel nostalgia for a time when freshness and good nature made the atmosphere of our shell bourses, when excited "shell nuts" exchanged handfuls of their treasures in a joyful hubbub without strictly caring about shell values, and when sales between collectors were the exception. Back then there were two or three tax-registered (legitimate) dealers in France. . . there still are, but now, people are not as law-abiding as in the U.S. The French (and European) market is ruled by a vast majority of "undercover dealers" (sometimes even shell "raiders") who are far more interested in shell money than in shells themselves, use unreliable sales arguments, and set prices which may vary depending on the client. As a result of this frantic race for money, the few collectors who display at shell bourses can hardly exchange, though exchange was the original purpose of these events. All prices, including those of the "little families," have increased a lot, the number of collectors has not, and the shell traders raise their prices to compensate for lesser sales, their stock turnover getting slower and slower.

Is mercantilism an unavoidable sign of the times? Whatever the answer, the result is that money has completely spoiled the spirit of shell collecting in our old Europe by taking out the shell magic. Now it is almost completely a matter of money and spending power; shells have become a collection like other

collections of beautiful, pricey things, with the accompanying big burglaries (the Lutry robbery) and swindlings (the tremendously expensive fakes like *Cypraea rosselli albolutea* and *Cypraea teramachii splendida*). The whole shell sphere is the victim: here the shell bourses are more intended for the professionals and the wealthy buyers than for real amateurs. Their atmosphere is rather dull, collectors spend less than in the past, and there is an obvious lack of confidence due to recent events.

However, I do not think that collectors should be excluded from displaying and selling in our bourses; selling spares from their collections will give them the ability to buy more from the legitimate dealers, who could then profit from these sales made by the amateurs — provided there is no perverse shift from a strictly marginal phenomenon to even more undercover but "professional" business. Further, it seems obvious that undercover dealers should not be allowed to put commercial ads in a club newsletter, since they are unfair competitors to the legitimate dealers.

However some of the legitimate dealers think that it is their club's duty to help them fight against the "raiders" by preventing them, and the collectors with them, from displaying at shell bourses; in order to be the only ones to sell, they lobby to reach their goal. But they must not forget that a club is every member's club, so everyone should be allowed to display shells at bourses. It is not a club's duty to protect legitimate dealers against their since unfair competitors they have legal weapons which they can use if they want to. We need a happy medium to salvage true amateurism and real professionalism. Here in Europe I feel that they both could soon belong to the Kingdom of Memories.

SHELLING WITH POSTAGE STAMPS

Stanley Gibbons Collect Shells on Stamps by Tom Walker,
Stanley Gibbons Publications, 5 Parkside, Christchurch
Road, Ringwood, Hampshire, BH24 3SH England,
November 1995, First Edition, 202 pp., ISBN: 0-85259-
394-5, £16.95, UK price.

There may be some of you who collect shell stamps, as well as shells. If you do, then you might be interested in the following stamp catalog. This is a comprehensive catalog of shell stamps with black and white photographs, in much of the manner of Scott's catalog. It was excerpted from *Stanley Gibbons Stamps of the World Simplified Catalogue*, published annually in three volumes, with monthly supplements.

This first edition contains over 3,200 stamps which show over 750 identified living mollusks, as well as many unidentified shells and over 30 fossil shells. The foreword was written by S. Peter Dance, well-known among conchologists. The author included an acknowledgement to our own Guido and Cecile Poppe for assistance with shells, and to Simon Kelly and Phil Palmer for details of the fossil mollusks. It is a heavy stock paperback book measuring 5.8 by 8.2 inches and .7 inches thick. The main section has the stamps listed by country and number, with photos in three-quarter size. Prices for used and unused stamps are included.

Other sections include an index of the shells by English name and another by zoological name. Included as well is a classification of species as listed in the catalog. Finally, there is a theme list which offers some excellent clues to those who wish to limit their collecting to a thematic one, such as stamps with image of shell reversed, shells used as musical instruments, shells used as money, etc.

To my knowledge, the only place to purchase this book is direct from the publisher, given above. In addition to £16.95,

there is £6 for shipping and handling. At the time the book was ordered, the rate exchange was \$1.52 to £1. This came to \$35.02 on a credit card. They accept only pounds sterling, not US dollars, but do accept all the major credit cards. If you prefer a faster method of ordering, the telephone number is (country code 44) 01425 472363, telefax: 01425 470247.

This should be considered a really comprehensive, quality book, with corrections noted of the mis-identifications often seen in shell stamps. —Sylvia Edwards

OOPS:

Kevan Sunderland was the photographer of several of the photos in Dr. William O. Reid's article on the "Mystery Shells of the Falklands" in the June *AmConch*, p. 4. Our apologies, Kevan.

And Double Oops! From Thora Whitehead we hear once again: "Alas, the tale of those 'Awful *Aspella*' is not right yet!" The upper figure in the Letters column, March, 1996, p. 18, she says, is not *Aspella producta*, but *Aspella anceps*. The printers figured the wrong specimen. All your editor can say at this point is: Back before the deplorable emphasis on standardizing common names (and pointlessly rechristening so many of them!), one of these chalky little beasts was called the "Wretched *Aspella*," and it must have received its common name by some such behavior as this!

ART WEIL GOES FISHING ON CONCH-L... WITH A CAMERA!

Late at night on the Thursday, August 1, COA member ART WEIL dangled some apparently rich bait in front of the subscribers to CONCH-L. As you'll see, his catch was amazing. He hauled in a notebook-full of interesting tips on photographing shells from a lot of experienced photographers. Follow the "thread" and you'll come away a better photographer, we'll bet, with a lot to think about.

To: Conchologists of America List

<CONCH-L@uga.cc.uga.edu>

From: MR ART WEIL <UWWX76A@PRODIGY.COM>

Subject: Photography

Now, darn it, I'm really a very good photographer. But I'm also humble and modest. And even though I take the occasional outstanding picture, I publicly admit I don't know everything — not even almost. What I would like is some advice on taking pictures of very small shells. A lot of the eps I deal with are adults at 2-3mm. I can get decent photos of them but nothing like the quality of a Sharabati, a Poppe, or a Coltro. I think we could all use some advice on shell photography. Let me propose just a few of the many questions:

1. What is the best lens to use?
2. Where do you place the lights if you are using flash?
3. How strong do the lights have to be?
4. How do you get better depth of field?
5. What film do you use?

There! That's a few to start off. Maybe we can all become better photographers if some of you real great guys out there would share your secrets. —Art

Mike Tove responded early Friday morning:

Art, I've not done any photography of micro-sized shells per se, but I have (successfully) taken cover-quality photographs of other very small items (gemstones). The good news is that it is very easy to do; the bad news is that it doesn't require a special lens — instead, it requires a low power light microscope equipped with a camera adaptor. Photographically, the best you can do is use close-up lenses or (better) bellows which allow you to convert any lens to a super macro. A low power telephoto lens (about 135-200mm) with macro bellows will get you close. The problem is that you will still have a lot of background to crop out. You will also encounter lighting problems because you will be so close to the object that you cannot provide adequate light unless you use a series of auxiliary, non-attached flashes. You will also need a mounting apparatus because you will not easily hand-hold the camera. Of course, you can opt for a smaller original image and blow it up in the printing, but again you lose because you run into loss of color saturation and grain.

Hands down, the best film commercially available for tightness of grain, color saturation and balance is Kodachrome 64. I've been a photographer for 25 years, I've tried virtually every type of film out there and I keep coming back to this position. It depends ultimately on what you want to accomplish.

Great specialty photos generally require special equipment. However, good results without the equipment can be had with good technique. You will want to select your background carefully, use the greatest macro arrangement you can (as above or talk to your camera dealer), use a tight-grained film, and provide good natural or flash-generated light from multiple angles (indirect light is better than direct because you will minimize hotspots and shadows). —Mike

A few minutes later, he added a postscript...not his last word.

Art, I got going with one train of thought on my past post and forgot to answer all your questions. Lenses, I mentioned, and film. Placing the lights and what strength, I don't know; it largely depends on the equipment you've got and the color of background you choose (dark background = more light), also the mood of the photo you want. As for depth of field, stop down further. F22 will

give you 5X better depth of field than F5.6. —Mike

Art responded later on Friday with another question:

Michael, how do you feel about Fujichrome VELVIA as a film? A photographer recommended it. I do have and use a bellows. Usually my biggest problem in depth of field. —Art

At which point, Barry Roth got into the act:

VELVIA is reported to give extremely good resolution, with 50 speed Velvia almost as good as Kodachrome 25. In common with other Fuji products, it tends to produce bright, distinctive color images, often especially strong in the reds (I've heard some photographers refer to Fujichrome as "Disneychrome"). Whether this is desirable or not depends on one's personal preferences and the goals of a given "shoot." For shell images, I personally like Agfachrome, which I think has more subtlety in the brown tones — therefore nice for snail shells.

I sure don't envy Art trying to photograph epitoniids; white, shiny objects like epitoniids present special problems. A Polaroid filter over the lens can help reduce glare and reflections off a glossy surface.

One way to get greater depth of field is to use faster film, which allows for a smaller aperture. The tradeoff here is that faster film may show grain or loss of resolution (less sharpness) on enlargement. As with so many things in photography, the answer is to experiment. —Barry Roth

...followed by Tom Watters, one of American Conchologist's excellent "cover photographers":

Here's another technique. I learned it from one of the greatest micro-shell photographers around, Antonio Martins of the Azores. You need:

- A "hypodermic" release with a lock for your camera - something you can use to keep the shutter open on the "bulb" setting
- One to three handheld flashes, set to "manual" and, if possible, interconnected such that when one fires, all fire. This is a simple connection that any camera store will have.
- Camera on mount or tripod
- Whatever it takes to get the magnification. I use a set of 3 tubes on a bellows, with the lens attached to a reversing ring. At maximum extension, my field of view is about 4 mm. The reversing ring allows you to back off the subject, rather than being right on top of it.

Set up everything, and get your best focus with the aperture at its widest. Have your flashes ready. Now stop down as much as you can — f16, f22, whatever. What you will see is that things get very dark in the camera. Turn off a light or two in the room if possible. Now open the shutter and leave it open by using the 'bulb' setting and a lockable release. Position the flashes - fire 'em. Release the shutter. Simple!

How many flashes, and how far away, will take some experimenting. I take 3 shots with the flashes at different distances. This would be the case for any technique. The idea here is that so little light comes through the stopped down aperture that you can leave the aperture open in dim light while you position your flashes. The light on the photo comes only from the flashes, not incidental background light.

For a uniform black background with no glare, use black velvet or velour as the background. Raise the subject above if possible so that the material will be out of focus. You can use a pin stuck through the velour with a dot of clay or stickum to set the specimen on. Don't leave it on clay for very long, though, as oils from the clay will soak into the shell. —G. Thomas Watters

...and Steve Long:

I'm also an amateur at this but since the largest I ever shoot is about 15mm, perhaps some very basics are in order:

- 1) When you get down near 1:1 you should reverse the lens and shoot through it backwards — optical fact. You will be amazed at the improvement in depth of field with a reversing ring. I used to shoot an entire 36 exposure roll and perhaps not have one perfect focus and depth. Now almost any shot is great.
- 2) You can buy a neat Vivitar strobe slave so that a second flash is fired with the first without wires.
- 3) It is usually easier to move the subject to focus than to move the camera. Drill a hole in a bench and put a piece of 1/2" running thread bolt through with a couple of washers on top and a 1/2" nut in a die handle (thread cutting die). A piece of 3/8" pipe to 1/2" adapter should jam onto the end of the running thread and then screw into a 1/2" pipe flange to which you can mount a small piece of formica from a sink cut out. Use 1/2" or 3/4" pipe flanges, elbows, & pipe to make a vertical camera mount above the bench and drill through an end cap to screw on your camera mount.

The setup allows you to use bellows or extension rings to set your size range and then use the table to focus the object (shell). If you want to shoot live miniature shells, a small plastic box is fine or a glass bowl with a piece of live rock in it. This has the added advantage of keeping the camera at a comfortable height. — Steve Long

P.S. If you want a pro - talk to Dave Mulliner in San Diego or Bert Draper in Los Angeles.

And when we asked Steve's permission to print this, he added a few more comments:

The key is the reversing ring. The "hypodermic" [mentioned earlier]... is a twin cable shutter release so that the reversed lens is still connected and "stops down" before the shutter snaps.

Dave Mulliner made me a brass reversing ring for a 16mm movie camera lens that, when mounted on my old Miranda DR, fills a 35mm frame with a 5x7mm shell — with unbelievable depth of field (a round ball is sharp until you go around the curve).

There were some articles in a Western Society of Malacologists Annual Report (mid 70's) and J. Sherman Bleakney had an article in the *Veliger* (late 70's?).

On Saturday morning, Mike was back, on the subject of film again:

Art, I've not tried that version of FUJI. I like FUJI overall, but nothing can or likely ever will replace Kodachrome - it has to do with the fundamental differences of emulsion technology. The only film I've ever seen which was as good was from NASA (satellite areal photographs) but I'd bet you won't want to pay the tab for it (at least right now). Unfortunately, the problem with a bellows is that by extending the lens away from the camera (to effect close-up) you sacrifice the depth of field. That will happen no matter what you do for high magnification, since depth of field is related to total field size. However, you should be able to stay within the parameters of the shells you are taking by stopping down.

What size lens are you using on your bellows? Try increasing the lens magnification and reduce the amount of bellows extension; compare that with the reverse condition (smaller lens and greater bellows extension). See if you can improve with varying combinations. Also, remember that depth of field is plus AND minus your focal point. If you focus (while wide open) on the top of the shell, you lose the benefit of some of your depth of field. Try focusing (at the lowest possible F-stop) about 1/3 "down" from the top of the shell. Then stop down to F-22 to take the shot. —Mike

At this point Art rebaited his hook:

Michael, Thank you for your reply to my photo inquiry. It seems that there are many solutions to the one problem of depth-of-field. But none of the good ones are cheap. My lens is a micro lens which worked well reversed on the end of the bellows. What

I generally do with a very small shell is focus with the lens wide open. Then, when I am reasonably satisfied, stop it down to 22, close my eyes and shoot. It works fairly well but I keep thinking — there's got to be a better solution. —Art

Steve re-entered the discussion:

Art, get a twin cable release — the "hypodermic" someone mentioned earlier. The release can be adjusted so that the stop down occurs fractionally prior to the shutter release. This, along with reversing the lens, insures optimum depth of field. This is a cheap solution. —Steve Long

And on Sunday morning, so did Mike Tove:

Art, try using a 135 to 200mm lens. If you don't have one, look around your local area for a used camera store, or get a copy of Modern Photography (or similar) and shop in the classified ads in the back. Also try to get a sturdy tripod that will enable you to steady the camera. Movement, even slight, can affect the sharpness in a way that appears to be a focus problem. You don't need to be fancy with either. Depending on your camera body, you should be able to pick up the lens for somewhere in the neighborhood of \$100-150, or possibly less, and the tripod, around \$25-40. I also recommend a remote shutter release — even the old fashioned manual cable release is OK. —Mike

From Sylvia Edwards came this comment:

Michael - I have a daughter who is a semi-professional photographer (she freelances) and she won't use anything but Fujichrome Velvia. I use the cheaper version - Fujicolor REALA — myself. —Sylvia Edwards

Finally, Richard Goldberg was lured out into the melee with the following photographic essay. Rich is one of the finest among us. Want to see an example of what he can do with microshells? Get hold of a copy of the March 1988 American Conchologist. Rich's cover photo features two views of a 7mm land shell from Pinar del Rio Province, Cuba, Blaesospira echininus (Pfeiffer, 1864). Rich's photography is surpassed only by the incredible spiny beauty of this vermiform mollusk.

Art, you've gotten a lot of great responses to your inquiry about photographing micro-epitoniids. I think there are as many techniques for macro photographing as there are species of micro epitoniids. So let me add yet another approach to the mix. Please excuse me if any of this seems redundant or basic.

I am not sure what photographic equipment you currently own, so I will base this explanation on the equipment that I use. It is a non-electronic flash approach. I have been very satisfied with the results. If you are already configured for macro flash photography, this method will take a bit of investment in equipment. The approach is a modified version of a technique used 25 years ago by the late New York Shell Club and AMU member George Raeihle, one of the truly outstanding photographers of his time (we all have our mentors). I have modified and refined his techniques over the years and have come up with a system that really seems to work every time.

A photographic copy stand allows the camera to be mounted perpendicular to the shell. I use either a 55mm Micro-Nikor lens (F-stop down to F-32) or a 105mm (F-stop down to F-22). The 105mm lens is sometimes more advantageous for micro shells since you will not need to move in as close to the subject. The ability to stop down to F-32 on the 55mm lens provides exceptional depth of field, even with 5:1 + magnifications. I use a bellows since it provides the flexibility of changing magnifications without having to remove the lens or extenders. I often mount the lenses to the bellows using a reversal mount to increase my depth of field. The bellows is mounted to the copy stand, not the camera. The camera is what moves up and down as the bellows extends and closes. You can then do fine focusing adjustments without worrying that the lens will move in too close to the shell and block out the light. The bellows is mounted at two points to

(continued on next page)

ART WEIL GOES FISHING ON CONCH-L *(continued from page 21)*

the copy stand to avoid vibration. My Nikon allows me to also pull back the mirror after composing the shot to further reduce any chance of camera vibration when the shutter is released. Fine focusing can be done from the bellows.

Many photographers use flash as their light source with excellent results. As an alternative to flash photography I use photo floods, allowing me to see the results of modeling the lights before I expose the film. The light source is tungsten balanced ECA bulbs (3200 degrees kelvin) that are available in most well stocked camera shops for about \$5.00 each. Kodak manufactures ET 135-36 Ektachrome film with an ASA of 160. Kodak used to manufacture an ASA 50 version of this tungsten balanced film, but when the formulations were improved, they phased out the lower ASA film. When used with the ECA bulbs, the film gives an exceptionally true color rendition without over-exaggerating the saturation, yet the new formulation does not exhibit the granularity that one might expect from a higher ASA film.

The ECA bulbs are screwed into ceramic socks that are attached to goose-neck arms. As with small flash units the ability to move the lights around the shell will enhance the modeling of the light, great to accentuate the frilly ribs of epitoniums. The lower the angle of the light, the more the ribs are accentuated.

The light switch is a wall dimmer mounted in a box. The ability to slowly increase the intensity of the bulbs and then slowly turn them down will extend the life of the bulbs 10-fold, though the bulbs must be at full intensity to obtain the correct color balance. When the bulbs start turning black at the base, it is also time to replace them. You are then not getting a true 3200 degree output. I did have to rebuild a basic copystand for this lighting arrangement. I call this my WYSIWYG (what you see is what you get) set-up. If you attempt a similar set up, make sure you use ceramic sockets and a heavier gauge wire. These 250 watt bulbs can heat up quickly if left on for an extended period of time.

To reduce glare off shiny shells I use either a polarizing filter, or better yet, mylar gels (8" X 10" in frames available at well-stocked camera shops) placed in front of the bulbs which diffuse the light. The characteristic hot spot seen on *Oliva*, *Cypraea* and other glossy shells is reduced to a faint haze.

The higher foot candle output of these ECA bulbs with an ASA 160 film allows you to set a higher shutter speed at F32 (F22) or whatever, especially with the high reflectance of the white epitonium. The depth of field with the light output and higher ASA film is tremendous. I have pulled the bellows out to maximum extension and still have had excellent d-o-f with shells as small as 2mm. I can remember shooting an exposure of an epitonium of about 5mm at F32 with a 1/4 second exposure. D-o-f was not sacrificed at all.

As does Tom, I also use black velvet fabric as a background. Just make sure the velvet is free of dust and lint particles which will reflect light back onto the film plane. One of the lint-lifting roller gadgets works just fine. Drape the black velvet over a flat slab of styrofoam, which will allow you to easily push a long pin into a solid surface. I found 3 inch long flat-head pins with small heads in a surgical supply catalog; one inch into the styrofoam, raising the shell 2 inches above the black background. Since the film plane is perpendicular to the shell, the pin is hidden behind the shell. The black velvet absorbs the light and never exposes, resulting in a nice limbo background. Be careful when using putty, not only because of the acids that can stain the shell as Tom mentions, but also, as you know, those fragile ribs can be crushed so easily.

After composing the shell and adjusting the position of the lights, I set the exposure by centering up the shell under the center-weighted zone of the through-the-lens meter. Bracket your exposures — in the case of white epitoniums, try underexposing 1/2 to one stop. Reposition your shell and you're ready to snap

the exposure. Once you get comfortable with your set-up, you can pretty much get the correct exposure the first time. Also, as with all copystand work, use a hypodermic shutter release to reduce camera vibration.

This type of set up also allows double/multiple exposures on one frame of film. If I have only one specimen of a species, I can compose and shoot one exposure of the shell on one side of the frame, and then, using the multiple exposure knob of the Nikon, re-compose, relight and expose the shell on the other side of the frame. Since the black background does not expose, you get a seamless shot that looks as if two shells were actually photographed simultaneously.

I discussed this technique at length with Tucker Abbott when he was preparing to photograph shells for *Compendium of Land Shells*, and the results can be seen many times in that book. The trick is underexposing about one to two stops depending on the reflectance of the shells and the number of multiple exposures on one frame. I have gotten up to 10 exposures on a single frame, though it took the better part of 3 hours to set up and execute. You will have to experiment with this technique. But it works. And having the advantage of separately modeling the light for a dorsum, aperture and alternate view allows for some very interesting lighting effects. It also prevents a shadow being cast on an adjacent shell when lighting with low angles. This multiple exposure technique works nicely for micros as well as larger shells.

Anyway, I hope this lengthy explanation is useful. I am glad the photographers on Conch-L have jumped in to discuss their techniques. Good luck with your epitonium photographs. We hope to see some of your results in *American Conchologist* real soon. —Rich Goldberg

Art again:

Rich, many thanks for your advice and the time taken to think it through. I downloaded it so I could go through it carefully. I think we might find that a great many people did the same for their own purposes. After thinking about it, I wonder if there isn't a "Photography" web page that would delight in solving peoples' problems for them. There must be. My great expertise was in sub-miniature photography. I blew up Minox pictures to 20 inches. They won a few prizes. But, if I have learned anything at all from this discussion it is to do what you'd do if you were sick — go to the doctor, the person who knows how to make you well. I think what I will try to do is find a professional photographer whom I can interest in shell photography. After all, he'll already have all the necessary equipment or will know another photographer he can borrow it from. Thanks again —Art

Another note from Mike Tove — to Sylvia on the merits of Kodak film: and why wildlife photography is different from shell photography:

Sylvia, the question is what kind of photography does she do? I have had recommended to me, over the years, by professional photographers, this and that film. For their area of photography it's fine, for wildlife photography, forget it. For me, what I do with shells is relatively recent and barely worth mentioning compared with my real photographic efforts.

For the past 25 years, I've been observing and photographing birds and mammals. Action wildlife photography is a whole different sort of beast because you do not have the luxury of prearranging your shots and making sure the subject fills your frame with the correct light and color balance. Until a photographer works with limited color backgrounds and smaller than ideally framed subjects, he/she cannot really know what the limits of the film are. In my case, I cannot afford to play around with "film experiments" because I cannot rely on all these "better mousetraps." Where would I have been 3 years ago when I had the good fortune to discover and photograph a species of whale

previously unknown from life: ie. world's first live sighting ever. The Kodachrome shots I got are *National Geographic* quality.

The other aspect of the Kodachromes which, so far, is unmatched, is archival life. The photographs I take need to remain good for years and years in the future. E-6 and related emulsions simply do not archive as well unless stored in refrigerated, dehumidified store rooms. Kodachrome is heartier.

Also, nothing beats Kodachrome's tight grain AND color saturation. If your subject is only 1/8 or 1/16th the frame (Art's dilemma), then to blow it up 6 fold really taxes the film's limits. However, in all fairness, since I've not tried the FUJI, perhaps I will (provided it is a transparency, not print film). Even in Art's situation, the tighter the grain and deeper the color saturation, with natural, not pastelly colors, the better. I'd be interested to know how the Fujichrome Velvia compares on these aspects. —Mike

Rich Goldberg suggests searching the Net for more information and challenges Art to publish his efforts on eps:

Art, I can't imagine that there aren't plenty of Web sites dealing with photography. And I can't imagine that I've never

done a search on this subject either! Check it out and see. Let us know if you find any of interest to shell photographers. I'll bet there are volumes dealing with photography in general.

I've learned so much by watching the experts at work (photographers). It rubs off on you. But after all is said and done, experimentation is the key. Ansel Adams used to experiment in the darkroom with all kinds of weird chemicals and solutions to develop his film and prints. The results are outstanding. I think if I ever had the opportunity to watch this master at work, I might have pursued a different path in life!

Keep us all posted on your progress, no matter what route you take with your micro photos. And I am serious about eventually seeing some of your work in print. We all need additional epitonium reference material. Good luck. —Rich

And then "Grumpy Skip" Stahl comes in with the final solution:

You may all want to check out <http://www-swiss.ai.mit.edu/photo/internet-resources.html> for some of your answers and needs. —Grumpy Skip

THOSE DEADLY ZEBRAS

In the *Kansas Pearly Mussel Newslines* of the Kansas Department of Wildlife and Parks, we read that Dr. Richard Neves, as a result of his studies in Lake St. Clair (Detroit), states that zebra mussels adversely affect unionid survival by: 1) impairing locomotion and burrowing behaviors 2) prohibiting occlusion of valves 3) prohibiting gaping of valves 4) occluding apertures 5) competing for food resources 6) causing shell deformities 7) exposing unionids to toxic metabolic waste and 8) adding weight to unionids which promotes settlement in soft sediment. He concludes that unionid density and species richness are significantly reduced within 3-5 years of the initial infestation by zebra mussels.

SOME INTERNET STATISTICS:

As of late August, the new Conch-Net had 1900 "hits" or visitors. By the time you read this it should be passing 2,500!

Conch-L, the COA Listserv, had topped 175 subscribers, some 85 of whom are current COA members, from 23 countries.

The North Alabama Shell Club has ten members on the Net! Glen and Marion Deuel, Debbie Wills, Travis Payne, Sylvia and Bob Edwards, Joan and Nick Skoglund, and Johnnie and Claud Ruthven.

CONCHATENATIONS (continued from page 15)

scientific senses." "Fisc" (the public, state or royal treasury) is preferred to "fisk," except in Scottish law, but the word is now rare. "Lantisk" (the mastic tree) is now preferred over "lantisc," and "panisc" (a little Pan), is rare, with a single quotation in 1850 balancing one in 1604 for panisk." "Subfusk" (dusky, dull somber) was the dominant spelling from 1710 to 1900, with "subfusc" winning out in the 20th century from its first appearance in 1883. Among common English words, "mollusc" and "disc" are the only exceptions to the general pattern of derivation of -sk words from Latin and French:

Latin French

asteriscus = asterisk	casque = cask
basiliscus = basilisk	frisque = frisk
Damascus = damask	masque = mask
flasco = flask	risque = risk
muscus = musk	
obeliscus = obelisk	

Asterisk, basilisk, damask, and obelisk all had variant spellings with -sc endings in previous centuries, but have now standardized on the -sk ending. The preference for -sk endings in English may reflect the Germanic affinities of the language. The continued persistence of the -sc spelling of "mollusk" probably results from its coexistence with the words

"molluscan" and "Mollusca"; just as the continued existence of "disc" correlates with the existence of "discoïdal." The other words derived from Latin listed above do not have common adjectival forms that would allow persistence of -sc endings.

I'll conclude with an analogy to the divergence of populations of a species. Imagine the word "mollusk" evolving in England. The word is polymorphic, with variants "mollusk" and "mollusc," the latter being less common initially. The word "mollusk" dispersed to the United States, but "mollusc" did not. Subsequently, "mollusc" increased in frequency in Great Britain, displacing "mollusk," and then propagated to other parts of the world as malacological traditions were established in South Africa, Australia and elsewhere. As English has become the primary language of science, many European scientists have adopted it, generally using British English because of proximity. Since "mollusc" is now (probably) more widespread and common globally than "mollusk," people have assumed that it was always the common form and that "mollusk" evolved from it in the United States. In fact, "mollusk" was formerly the dominant form even in England. Similar misinterpretations often happen in attempts to figure out the evolutionary relationships of species, but careful analysis of characters generally reveals the underlying patterns.

OBITUARIES

Kathleen Yerger Johnstone

1909 - 1989

Kathleen Yerger Johnstone died Wednesday June 19, 1996 at the age of 89. She is survived by three sons, M. Inge Johnstone of Ozona, Florida, Yerger Johnstone of London, and Judge Douglas Inge Johnstone of Mobile Alabama and four grandchildren and other relatives. Mrs. Johnstone was a native and lifelong resident of Mobile. She is known for her interest in shells and the discoveries made by her and her husband off the Alabama coast.

Many shell collectors will remember reading her books, *Sea Treasure* and *Collecting Seashells*. She also authored a third book which unfortunately was never published. In 1953, William Clench named a shell for her which she recovered from off the coasts of Alabama and Mississippi, Johnstone's Volute, *Scaphella junonia johnstoneae*. In April, 1990, the Alabama State Legislature designated this shell named in her honor as the State Shell of Alabama.

Kathleen loved life and hers was filled with adventure. She loved nature, and especially seashells. Tragically, in her later years, she suffered from Alzheimer's Disease. I remember meeting her a number of years ago while visiting with her late husband. I remember being awed and impressed by this remarkable and gracious lady.

Mrs. Johnstone and her family were friends of many malacologists. Over the years they were visited by such notables as William Clench, William Old and R. Tucker Abbott. The legacy of Mrs. Johnstone lies not only in her malacological discoveries, but also in her ability to convey her enthusiasm for the science and the hobby, an enthusiasm which continues to live through her books and in the lives of the malacologists and collectors she inspired. She was truly a pioneer of malacology in the state of Alabama.

— Douglas N. Shelton

Gary Magnotte

1938 - 1996

It is with great regret that I report the sudden passing of Gary Magnotte. He died at home of unknown causes on Wednesday, Aug. 14th. Per Gary's request, there will be no service and he will be cremated and his remains scattered in the ocean.

Gary was born in Detroit, Michigan in 1938 and moved to Florida in 1952. He attended Riverside Military Academy and Emory University in Atlanta. In the late 50's and early 60's, Gary worked as a mate on fishing vessels out of Pompano Beach, Florida. He also operated an art studio in Deerfield Beach, FL. In 1968, Gary married Rudi and took over the operation of Burry's Shell Museum in Pompano Beach.

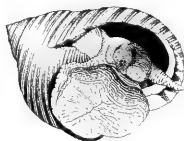
Gary was very active in shelling activities for the next 15 years as a dealer, as President of the Broward Shell Club in 1973-74, and as an author of *Conus rudiae* (now a disputed junior synonym of *Conus patae*) in 1971. Gary travelled and collected extensively throughout the Caribbean with such exotic destinations as Barbados, Bonaire, St. Lucia, Nevis and Honduras as ports of call. In 1986, Gary was honored by Dr. Ed Petuch with a nominate species, *Conus magnottei*, collected on the island Roatan in the Bay Islands of Honduras.

All of you who knew Gary join me in wishing his mother Erma, wife Rudi, son Phillip, daughter Ellen, and granddaughter Jessica our expression of sympathy at their and our loss.

— Wayne Harland

LITTORINIDS, ANYONE?

Not only is there about to occur a symposium on the Littorinidae, but there is a new worldwide taxonomic monograph of the living and fossil periwinkles (the "winkles" of British gastronomy) of the genus *Littorina*.



The first is the Fifth International Symposium on Littorinid Biology, 7-13 September, 1996, Cork, Ireland, the latest of a series of symposia on littorinids. There will be contributions on all aspects of the biology of littorinids and other intertidal gastropods of similar habit. It includes a workshop on the importance of marine gastropods for aquaculture. The organizers: Dr Ruth O'Riordan and Dr Gavin Burnell, Dept. of Zoology, University College Cork, Lee Maltings, Prospect Row, Cork City, Ireland. Phone 353 21 904050, fax 353 21 277922.

The second is *Systematics and Evolution of Littorina* by David G. Reid, Publication no. 164 of the Ray Society, London, England, and Dr. Reid's second book on littorinid systematics. Much information for littorinid collectors is contained, including the fact that there are 19 living species of *Littorina*, that they occur only in the Northern Hemisphere, and that though they are dominant in the northern Atlantic, they invaded from the Pacific as recently as the late Pliocene. 463 pages, 63 b/w plates of shells and radulae, 24 pages of anatomical drawings and 19 distribution maps.

UNITAS MALACOLOGIA

Did you know that there's a worldwide organization devoted to furthering the study of Mollusca by individuals, societies and institutions worldwide? From modest beginnings in western Europe as Unitas Malacologia Europaea, it has expanded to encompass malacologists all over the world. Current President is Dr. Rudiger Bieler, Chairman of the Department of Malacology at the Field Museum in Chicago. The *Unitas Malacologia Newsletter* is produced in Australia by Dr. Winston Ponder. The society meets every three years; its last congress was held in Vigo, Spain in September, 1995, and the next one will be held in Washington D.C., simultaneously with the 64th Annual Meeting of the American Malacological Union, July 25-31, 1998, as the First World Congress of Malacology. Want to know more? Get in touch with U.M. Secretary Dr. Jackie Van Goethem, Royal Belgian Institute of Natural Sciences, Vautierstraat 29, B-1000 Brussels, Belgium. Phone 32 3 627 4343, fax 32 2 646 4433, email vangoethemj@kbinirsnb.be

M. Dandrimont, a French collector, wishes to exchange cowries with someone. Write to him at 44 rue de la Fédération, 93100 Montreuil sous bois, France.

LETTERS:

As the COA Convention Auction Chairman, I wish to acknowledge the following people, without whom my job would have been extremely difficult. They volunteered their time when they could have been off enjoying some other aspect of the convention, and I just want to say how much their help was appreciated:

Martin Tremor, Dick McElvey, Ben Weiner, John Barker, Josy Weiner, Eleanor Hillman, Phil Schneider, Doris Underwood, Deb Lane, Betty Lipe, Jonathan Mosebach, Linda Koestel, Kristen Green, Dave Green, Bob Lipe

I would also like to thank the following donors whose names didn't make it into the program, but whose contributions certainly helped to make the auctions and the raffle the success they were:

Sue Stephens, Rob Allen Press, Mary Palmer, Audrey and Craig Thorn, Donald Dan, Donald Young, Barbara Elliott, Fran Thorpe, Sue Hobbs, Robert G. Howells, Carole Marshall, Paulo and Maria Antoinetta Angioy, William and Janet Paddison

Once again, my sincere thanks to all those people who helped at the convention and to all the donors. I hope to see you all again next year on Captiva.

John L. Jacobs, 1996 Auction Chairman, St. Petersburg Beach, FL

On behalf of the Belgian Society for Conchology we wish to thank the Conchologists of America for the donation of the COA award at our 6th International Shell Show last May 4 & 5. We all wish you and your board a very successful COA Convention in July. The official dates for our 7th BVC International Shell Show in 1997 are 3 & 4 May, 1997

R. De Roover, Secretary, BVC, Vorsterslaan, 7, B- 2180 Ekeren-Donk, Belgium

Thank you so much for the latest issue of **The Mag**. This is a magnificent issue...the articles are easy to read [and] beautifully illustrated, to say nothing of the magnificent cover. What a beautiful artist! He must be the reincarnation of one of the "biggies"! And a trip to the Antarctic — to say nothing of all the shells that Linné seems to have missed...I suppose it was a matter of shells and frozen mitts, or fur-lined gloves and no shells!

I so miss my shelling and the smelly parcels, and all my correspondents [since] I moved to the bush.

Olive Peel, Box 205, 1100 Belfast, Mpumalunga, South Africa.

Dear Friends in COA,

Your card was like a bottle of rare wine. We were touched to know so many friends, some from far-away places whom we haven't met, were remembering us. We missed you too. Maybe next year....

Congratulations on another great convention and warmest wishes for the coming year. Thanks for the memories.

Allan and Hazel Walker, 1036 Mantes Avenue, Jacksonville, FL 32205

Since sometime early this year, a number of fake, melanistic-appearing cowries have been produced in the Philippines, and some of these may have reached dealers in the United States and in Europe. The cowries being used are normal specimens, but some sort of coloring agent has been applied to the dorsum. So far, three species of cowries have been doctored, and there may be as many as four more which are circulating through the Philippines and many other places. The confirmed species which have been doctored are *Cypraea vitellus*, *C. arabica* and *C. eglantina*. Those which may have been doctored include *C. moneta*, *C. annulus*, *C. tigris* and *C. lynx*. If anyone receives these fakes, all they have to do is break the dorsum surface with a knife, and peel off the coloring agent with a finger nail.

James L. Barnett 8421 Buffalo Avenue B1/A2, Niagara Falls, NY 14304



Flowers to Glen Deuel, who has had hip replacement surgery. We hear he's back on his feet and undergoing therapy.

Our love and support to Vivienne Smith whose husband, Ernie is quite ill.

Flowers to Pinky Pinkerton who had a slight stroke in late May but his condition is improving. We missed you at the convention, Pinky!

Our sympathies go to Sue Stephens. Her husband, Lt. Col. John Stephens, husband of COA member Sue Stephens, died suddenly of an aneurism last May. Our love and sympathies go to Sue in this difficult time.

Chip Cippeaux had a quadruple bypass surgery Sept. 4. Last word: doing fine.




ANSWERS TO JUNE'S "KNOW YOUR CONES" QUIZ

Betty Hunter will return in December with a fearfully difficult Murex quiz.

1. *Conus diadema* Sowerby, 1834; *Conus coronatus* Gmelin, 1791; *Conus tiaratus* Sowerby I, 1833.
2. *Conus segravei* Gatliff, 1891.
3. *Conus textile* Linné, 1758.
4. *Conus neptunus* Reeve, 1843.
5. *Conus anemone* Lamarck, 1810.
6. *Conus hyaena* Hwass, 1792.
7. *Conus dalli* Stearns, 1873.
8. *Conus tribblei* Walls, 1977.
9. *Conus roosevelti* Bartsch & Rehder, 1939.
10. *Conus orion* Broderip, 1833.
11. *Conus tulipa* Linné, 1758.
12. *Conus magellanicus* Hwass, 1792.
13. *Conus janus* Hwass, 1792.
14. *Conus geographus* Linné, 1758.
15. *Conus gladiator* Broderip, 1833.
16. *Conus augur* Lightfoot, 1786.
17. *Conus ermineus* Born 1780.
18. *Conus magus* Linné, 1758 (The Magi).
19. *Conus prometheus* Hwass, 1792.
20. *Conus hieroglyphus* Duclos, 1833.
21. *Conus terminus* Lamarck, 1810.
22. *Conus nocturnus* Lightfoot, 1786.
23. *Conus selenae* Von Mol, Tursch & Kempf, 1967.
24. *Conus adonis* Shikama, 1971.
25. *Conus gauguini* Richard & Salvat, 1973.

OPERATION KOUNTER KONK : A SAS(SY) REPORT

by Secret Agent Snail 0028.8



Last winter (1996), rumors of spies and threats to mollusk security filled the countryside. Someone was plotting to expose top secret information about mollusks and molluscan culture. When these rumors were brought before the chief of the MIA (Mollusk Intelligence Agency), operation Kounter Konk was born. How do I know? I was the undercover agent assigned to go beyond the tide line and infiltrate the CIN (Conchologist's Information Network) — code named "Conch-Net." It was scary enough to make the most seasoned snail among us run for cover and deadbolt his operculum.

Security measures are low around the Conch-Net, so I was able to navigate my way through their network with relative ease. Why, they even post notices on "What's New" to keep their operatives updated on new files and data changes. As I infiltrated the main Information Center, I noticed paths leading in several directions at once, like a maze (or web). _Keeping my head down?_ or _Ducking low?_ and covering my silvery trail, I moved down the first path to their communication center — Conch-L. Due to the nature of their operatives' discussions, this area warrants a full time mollusk operative. _Baby's Ear_ or _Lady's Ear_ shell? Communiqués include photography techniques and intimate details of shell "size" and how stationary (or "stationery") some clams are. There are even initiatives to gather census and demographic information to determine if those lowly clams outnumber us mighty snails.

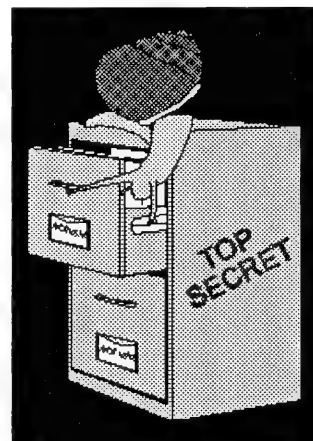
The next path — the COA Convention — detailed the annual meeting of human operatives. The purpose of this meeting seems to be to discuss celebrated "captures," hold how-to workshops and field demonstrations on collecting us (and/or our shells) "au naturel"! There are even intelligence experts to help identify us from published "slugshots." Speaking of publications, there is a whole path dedicated to the *American Conchologist* — that publication which is notorious for its exposé of mollusk intelligence and the centerfold shell pinups. Some of its reports have been put — full text — on the Internet for all the world to see. Potentially disastrous!!

My super sleuth snail skills came in handy as I entered the "Grants to Malacology" room. It seems they have an annual competition for grants to study mollusks. (Why, they even want to know how we share our jeans!!!) At least the operatives are listed so we can beware of these humans. In fact, I had easy access to information on their clubs and other related organizations from all over the world. (I've already passed this information on to our agents and foreign correspondents.) Their "Net" is growing and has an increasingly worldwide reach. Why, five new Australian organizations were recently added to their files! Soon there won't be any place we operate that isn't counter-sleuthed by the humans.

Later, I found a schedule of "Events" which lists most of their important gatherings throughout the year. And, according to the Frequently Asked Questions (FAQ) files, shells are exhibited at these events and trophies are awarded for the best specimen and/or educational exhibit. (Shudder!)

It isn't hard to find information on the leaders of the COA, or the Lambis Group responsible for weaving the Conch-Net and making our mollusk secrets public. COA leaders are listed

in the files of the "COA Organization" path, along with much secret information on their organization, its purpose and history. The Lambis Group are the ones to watch out for though. As they get intelligence from other COA operatives, these "spiders" weave the information into the files of the Conch-Net where anyone



The Lambis Group, creators of COA's Cyberpresences, the Conch-Net and Conch-L. From Left, John Caldeira, Texas; Emilio Garcia, Louisiana; Linda Koestel, Florida; Debby Wills, Alabama; Amy Edwards, Georgia; Lynn Scheu, Kentucky; Richard Goldberg, Maryland; and Gary Rosenberg, Philadelphia. Missing is Tom Watters, Ohio. Photo by John Parkhurst

with computer access can see it and print it off for his personal files. Just as I thought my mission was about over, another operative turned up evidence on a section of the Conch-Net that contained some as-yet unpublished material — Shell Resources. Even the coded title made my cilia stand on end. "Shell Resources!" What would those files reveal? I dressed in camouflage and went straight to their "Top Secret" file cabinets. Intelligence contained there has the potential to be the most damaging to mollusk privacy. As I've reported, most of the contents was revealed to the humans at their July convention, but my sub-operc investigation has revealed that there are other works in progress.

"The Shells" section currently provides introductory material on marine, freshwater and terrestrial mollusks and their habitats. At present, the freshwater mollusks are under the most scrutiny due to the expertise and extensive reports by human agent G. Thomas Watters. His reports, however, do include information on why some of our operatives are dying in the field— uh, stream — and it's due to pollution. Agent Rich Goldberg has been assigned to the terrestrial mollusks and my information sources lead me to believe that he will eventually put up video clips of mollusks in the wild. Send the word out to our operatives to remain clothed at all times! An information file useful to MIA is the "News of New Species" which includes information on marine, freshwater, and



terrestrial species. I'm not sure why the humans want this information, but as long as they are gathering it, we might as well use it — one way for us to find information about missing relatives, recruit new operatives, even help "Snails on Wheels" locate addresses to deliver those algae meals and sea biscuits.

Several files of FAQs are available to the humans. I wonder what they would do if we left a few questions of our own lying around — "Why do humans care what color mollusk eyes are?" or "Why do some wear their eyes at the top rather than the bottom of their stalks?" Or maybe "What difference does it make to humans if one social class of mollusks wears shells and another doesn't?" It would be interesting to see what a human might answer.

Luckily the section on "Collecting shells" and "Conchology 101" are still under-developed. However, my intelligence tells me that, when finished, these two areas will be most revealing. "Conchology 101," under leadership of human agent Gary Rosenberg, will tell more about mollusk biology, shell structure, and the mechanics of (blush!) reproduction than our doctors would mention. Delicate and quite secret topics like verges and torsion might even come out! "Shell Collecting," on the other hand, will delve into the mollusk's home life, not only telling where we live, but how to find us as well. There will also be a gallery of "slugshots" and information on (blush again!) cleaning and displaying our shells. They are, for some reason, investigating how to avoid that dreaded Byne's disease we get in humid environments.

It seems humans have belatedly become aware of our domestic problems and fragile home environments and are

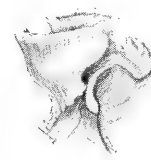
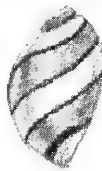
attempting to make amends by protecting us to some degree. Of course, this is inconvenient to some humans, but it is welcome news to us mollusks. The "COA and Conservation" path has information on human conservation efforts and even has a forum where opinions on these efforts can be expressed. We can add plenty of counter intelligence there.

The next area of the Conch-Net I was able to infiltrate was "Fun Stuff." Originally planned for human veligers, these files are used to indoctrinate their young about mollusks, but it seems adults like these files too — Shell Facts, Poems, Limericks, lists of things to do and a Shell Quiz. (I took the test and almost didn't pass, but then I almost didn't pass the Secret Agent Snail entrance exam the first time either.)

As if all the information currently on the Conch-Net was not enough to set molluscan intelligence operations back a few decades, there was even a file on "Additional Information Resources." It seems that there is a resurgence of intelligence activity concerning mollusks. If we don't move fast to cover our tracks, the world of humans will know as much, or more, than we do about ourselves. All they have to do is to stay tuned to this "Conch-Net" for top secret information as it is made available.

Well, it's time to head back sub-operc to keep an eye out for new Conch-Net developments. If you look hard, you might see me there, but please don't let that Lambis Group, or the COA know that I am on to them. Give my regards to the Chief, and tell our operatives to keep their clams shut when humans.

Till my next report, this is SAS(sy) 0028.8 signing off.



ALGAE WRAPPING KEYS CORAL REEFS

Cladophora algae spawned by sewage mishandling in the Keys and heavy nitrogen runoffs from the sugar cane fields in Palm Beach County are growing around sea fans and corals in Looe Key reef. The algae may be no danger to the corals, but this particular form of algae can only thrive in high nitrogen levels. Thus it is an indicator that there is enough pollution flowing out into the reef waters to kill the corals. Controlling the sewage problem alone could cost up to \$495,000,000. (from an article by Robert McClure in the *Ft. Lauderdale Sun-Sentinel*, as reprinted by the *Orlando Sentinel* and the *Central Florida Shell News*.)

COA member Karen Couch, a popular cover artist for *American Conchologist*, and freshwater mussel enthusiast (see *AmConch* September 1995 p. 25, "Mussel Collecting in Kansas,") has had some of her drawings published in the first issue of the *Kansas Pearly Mussel Newslines* of the Kansas Department of Wildlife and Parks, and now she is involved in producing an illustrated key to Kansas mussels.

MALACOLOG/CLEMAM — A MARINE MOLLUSCAN DATABASE

MALACOLOG is a project to create a single computer database incorporating all the marine mollusca of Europe and the Western Atlantic, under the auspices of Unitas Malacologia. Editor-in-Chief of the project is Dr. Gary Rosenberg of the Academy of Natural Sciences, Philadelphia, and Serge Gofas is the taxonomic editor of the European section. It is, at this point a coordination of two independent lists: CLEMAM is a database of European marine Mollusca compiled by Serge Gofas and Jacques le Renard (<http://www.mnhn.fr/base/malaco.html>); MALACOLOG is a data base of western Atlantic mollusks developed by Dr. Gary Rosenberg (gopher://erato.acnatsci.org) It is hoped that these endeavors will ultimately lead to a worldwide database of Recent mollusks, marine, land and freshwater.

JUST IN — The Malacological Society of South Australia will host the First Australian National Shell Show, Feb. 22-23, 1997 at Adelaide. Plan to go... it'll be late summer there.





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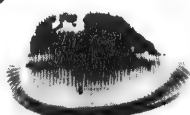


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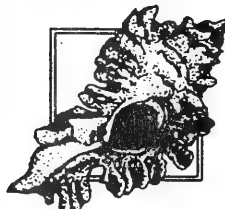
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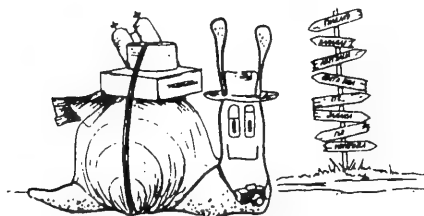
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On a recent visit to sand flats near Goodland, Florida, Mark Johnson happened upon some interesting situations which he was fortunate enough and skillful enough to capture on camera.



A Florida Horse Conch, *Pleuroploca gigantea*, makes a meal out of a smaller Lightning Whelk, *Busycon contrarium*.



A large female Lightning Whelk *Busycon contrarium*, being courted by eleven smaller male Lightning Whelks. (The whelks you can't see are buried beneath her and one is actually mating with her.)



A Pear Whelk, *Busycon spiratum pyruloides*, laying here eggs at low tide.

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VOL. 24, NO. 4

DECEMBER 1996

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Conus barthelemyi



Fulton's Currie



Cypraea fulton

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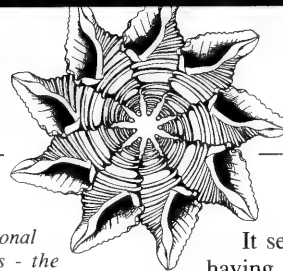


Muricanthus radix

Graceful Volute



Cymbiola pulchra crassa



VOL. 24, NO. 4, SEPTEMBER 1996

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors - the beauty of shells, their scientific aspects and the collecting and preservation of mollusks. Our membership includes novices, as well as advanced collectors, scientists and shell dealers from around the country and the world.

In 1995, COA adopted a resolution concerning the conservation of mollusks: Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological and cultural importance to humans, and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.

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PRESIDENT'S MESSAGE

It seems like only yesterday since we were in St. Petersburg having a grand time at the 1996 COA convention and enjoying the white sand beaches of the Gulf of Mexico. Here it is December and we are already well into the planning and preparation for the 1997 convention to be hosted on Captiva Island in July. If you have never been to Sanibel/Captiva or visited the South Seas Plantation, you're in for a real treat. This convention will be more fun than the law will allow, thanks to Convention Chairman Anne Joffe and all the members of the Sanibel Shell Club. Since this will be our 25th Silver Anniversary convention, I hope you will mark your calendars now, and plan to join all your fellow members on Captiva in July.

I received my copy of *Hawaiian Shell News* recently and was saddened to realize that this was the final printed version of the publication. For those of you who are not members of the Hawaiian Malacological Society, the Board of Directors has decided to discontinue its publication, citing decline in membership, increased cost of publishing *HSN*, plus increased cost in postage and handling. After more than three decades of publication, we now have to say "Good-Bye" to a dear old friend. Shell collectors and shell clubs need to understand the ramifications of this action, and come to grips with this possibility within their own world. However, with the loss of the printed version of *HSN*, members and shell collectors can now get the publication by the Internet's World Wide Web. Have you looked at the COA web-site (The Conch-Net) and the COA listserv (Conch-L) lately? Thanks to the dedicated work of the Lambis Group, COA has a major presence on the Internet and it is paying off in new members and increased interest. We are living in a very dynamic world today, a world filled with daily change. Look around you!! Look at the significant ecological and regulatory issues which confront our hobby today. Many of these issues, if not all of them, have serious impact upon the future of shell collecting. Look what has happened to collecting on Sanibel, the Florida Keys, and California. Look at the issue before the government of the Philippines concerning the ban on exporting seashells. As time moves forward, I believe the issues we face today in shell collecting will only intensify and become larger issues to all of us. IS SHELL COLLECTING A DYING HOBBY? I hope not, as it has brought over 25 years of happiness to my life, as I am sure it has to yours. We can not take things for granted and must be pro-active in dealing with these issues. The recent decision by the Hawaiian Malacological Society to discontinue the publication of *HSN* is a common problem with many shell club organizations today, that is, how to deal with rising costs and declining membership. Fortunately, these are not prime issues with COA at this point, but COA could well end up in Harm's Way at some time in the future.

DAVE

LAST ISSUE FOR 1997.

Please pay your 1997 COA Dues NOW.

COVER: December's cover is by Barbara Neville, 2206 Fairfield Place, Wilmington, DE 19805. The paintings are from the new "Wall of Shells" exhibit opening next month at the Delaware Museum of Natural History, Greenville, DE.

COA 25TH ANNIVERSARY - THE SILVER EDITION

The Sanibel-Captiva Shell Club and The Bailey-Matthews Shell Museum request the pleasure of your company at the 25th Anniversary Convention to be held July 13-18, 1997 at South Seas Plantation on Captiva Island, Florida. As you will notice, the meeting begins on Sunday afternoon. This gives a Saturday stay-over for those traveling by air. The Welcome Party will be held Sunday night.

We are planning many field trips and activities, including a trip through the J.N. "Ding" Darling Wildlife Preserve, a tour of the Edison-Ford States homes in Fort Myers, as well as collecting trips to several shelling localities.

According to legend, the 18th Century was a colorful era for Florida's tropical Southwest Gulf Coast. The coves and hidden bayous of Captiva Island harbored many a ship and ragged crew from pirate José Gaspar's ruthless band of buccaneers. Many legends still persist detailing his conquests and buried treasure. The name "Captiva" came about because Gaspar reputedly kept his women "captive" here. This tropical island paradise afforded safe housekeeping for his bounty.

The days of buried treasure and adventure on the high seas had long since passed by the time Captiva Island fell into the hands of Clarence Chadwick in the early 1900's. Chadwick, inventor of the checkwriter, acquired all Captiva and transformed it into a key lime and coconut plantation. Because

the island and the tropical setting reminded him of of the South Seas, he named his new plantation accordingly; now people refer to it as Florida's Tahiti.

He built a manor house, cottages for the workers, a warehouse and commissary (now the site of the King's Crown restaurant). Several of the facilities pay homage to Mr. Chadwick as you will see during your stay here. Thirty years later, a relative of Chadwick converted the Plantation into a resort.

South Seas offers the perfect setting for our 25th Anniversary. It provides a private and relaxed atmosphere, deluxe accommodations, convenient meeting locations, excellent dining, memorable entertainment, shopping, and warm, very friendly service. South Seas is a complete, self-contained resort featuring activities and amenities for all ages. The resort has over two miles of private beach, and provides elegance on 330 lush tropical acres.

Enclosed in this issue you will find an early hotel registration form. South Seas is requesting early bookings. Please note the cutoff date for reservations on the form. Check-in is at 4 PM, but we will try to accommodate early arrivals.

For more information please contact **Anne Joffe at (941) 472-3151, fax (941) 472-3153.**

EDITORIAL

The Passing of Another Giant

The changes and losses conchology has experienced in the past few years are near seismic in their crumbling of our conchological cornerstones. First we lost Walter Sage, and then Tucker Abbott, two fixtures in all our lives, men whom we had come to take as utterly for granted as the shells we collect and the water they inhabit. Then those waters became less of a sure thing, and so did the shells. The conservation question has us all rattled and searching about for solutions. The Royal Zoological Society of New South Wales has virtually expelled its Conchological Section, presumably for failure to be ecologically correct. A bill is afoot to ban all shell exports from the Philippines. Add the fact that our old friend and muricid expert, Emily Vokes, is retiring from 40 years at Tulane. And that new kid on the block, the Internet, has taken the communications world by cyber-storm, making the future of the printed word an unpredictable course. Just a month ago, Dr. Harald Rehder, our old friend at the Smithsonian, succumbed to cancer. And Hawaiian Shell News has ceased publication.*

This last event has nearly pulled the shaky props from under this sheller's conchology! Many of us learned our shell skills from the pages of HSN. We have been waiting eagerly for our copy of The News each month, some of us since 1960 or before! A shelf overleaning this desk contains almost three running feet of HSN notebooks, containing all those nostalgic old names and faces and issues and events. But financial reality has put an end to the reign of the king of shell publications. Smaller numbers meant higher mailing costs and higher per-copy printing costs. The decision was inevitable. But that lessens our grief not one whit. Nor perhaps our regret. Membership of Hawaiian Malacological Society has fallen to less than 500, down from perhaps triple that number in its heyday. But in that time some amazing changes have come

about. Shell book publication has mushroomed. Desk-top publishing has given birth to the Age of Information in conchology, as in everything else. The Internet, with its excellent shell websites, and with the Conch-L and mollusca listservers, has shown the benefit of instant information and ultra-quick communication. The entire world is becoming a community, condensed on our computer screens. So we've allowed our subscriptions to lapse, turning to these other sources, other publications. In our own ways most of us have contributed to the demise of HSN, and our sadness may be tinged a bit by guilt over our personal defections. It would be a fitting tribute to the decline and fall of this beloved giant if we all were to take stock of the aspects of shelldom we hold most important, and then to take steps to preserve them.

HSN, we'll miss you terribly. But, as they say, out of the ashes. . . visit the HSN web page at <http://www.hits.net/~hsn/>

**Deadline for bids to host
the 1998 COA Convention
is March 1, 1997.**

**Send all bids to
President Dave Green,
12307 Laneview Drive,
Houston TX 77070-2443**

*see p.18, Letters.

ONE LAST LOOK AT THE MURICIDAE

Dr. Emily Vokes is retiring from Tulane University at the end of the current semester. While this news will bring gasps of disbelief and loss, we acknowledge the tremendous knowledge she has contributed to our science and hobby, for a number of different groups of mollusks, but especially for the Muricidae. And we are grateful that she has made this one last attempt to bring order to the rapidly expanding body of information on the muricids. We offer it here, beautifully embellished by the photography of fellow murex lover, Dr. G. Thomas Watters.

by Emily H. Vokes

In the forty years that I have been studying the Family Muricidae, many changes have taken place in the generic framework of the group. In 1960, almost all of the species were simply *Murex*, and such taxa as *Chicoreus*, *Pterynotus* and *Hexaplex* were considered as subgenera. In the subsequent years, several workers, most notably the late George Radwin and Anthony D'Attilio, and more recently Roland Houart, have made great strides in helping me to understand this fascinating bunch of snails. If they were not so fascinating how could I have spent forty years and still feel that there is so much that I do not yet understand!

In an attempt to find a path through the taxonomic maze that this supraspecific splitting has developed, I have generated a list of the generic groups and their *suspected* relationships. You will notice more subgeneric relationships in the Muricinae and Muricopsinae than in the other groups — this is a reflection of the amount of work done on the fossil record of

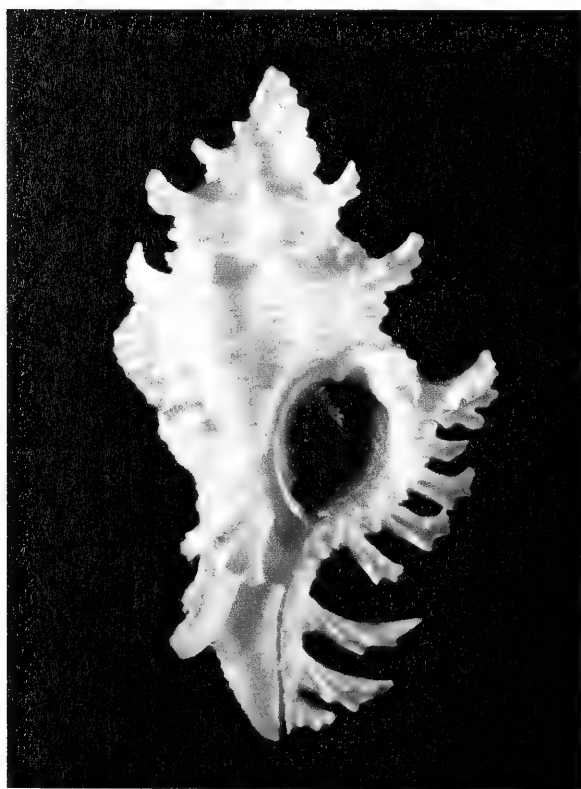
the groups in question. Needless to say, the thoughts expressed here are those of the author *only* and do not reflect a consensus among malacologic workers. But it is a place to start the argument.

I also frequently am asked, "Just how many species of Muricidae are there, anyway?" And the answer, of course, is: "It depends on whom you ask?" George Radwin would have given a very different answer from Ed Petuch, for instance. Over the years I have tried to compile what I think is a good "middle-of-the-road" approximation of this number. The lower number is certainly valid species, the higher number is "possible" (i.e., they may or may not be synonyms) species. If anyone wishes to put the entire list of species on the Internet, I will be happy to provide the list on diskette.*

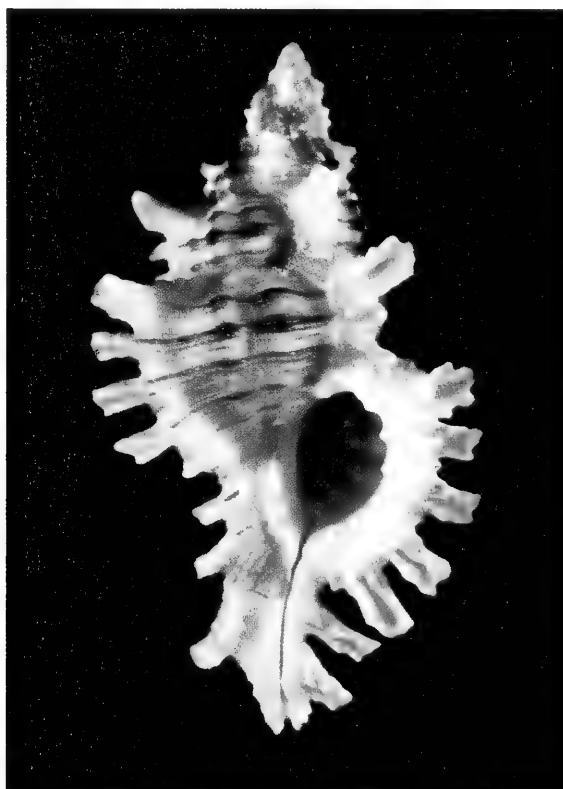
The numbers given herein are for RECENT species only; to try to evaluate the fossil species would take another forty years! The indented names are considered subgenera.

COA's Internet site, the Conch-Net, will be putting this list up in the near future, in its section, "The Shells." It also may become available elsewhere on the Internet in database format.

Department of Geology, Tulane University, New Orleans, LA 70118-5698



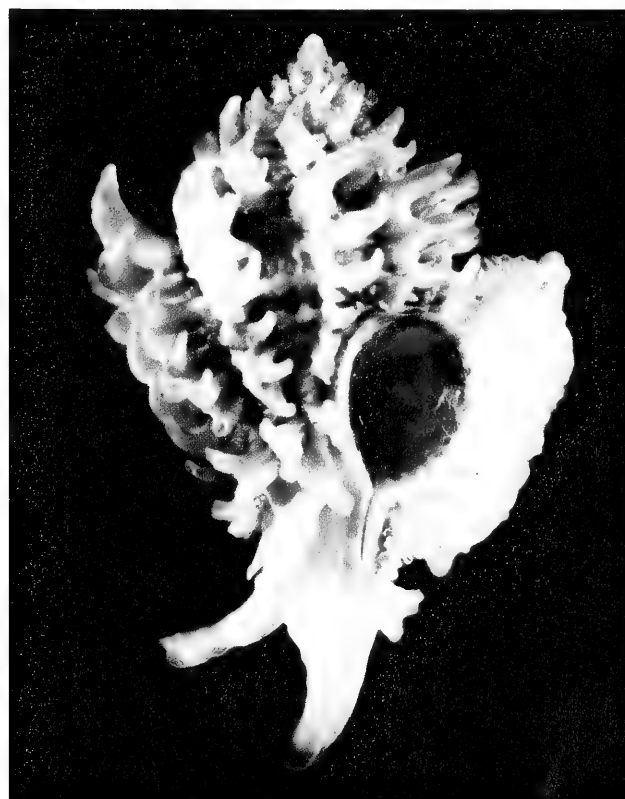
Chicoreus ryukyuensis Shikama, 1978. Okinawa. 37mm.
Photo by G. Thomas Watters.



Chicoreus dodongi Houart, 1995. Samar Island, Philippines. 27mm. Photo by G. Thomas Watters.



Favartia poormani Radwin and D'Attilio, 1976. Isla Gobernadora, Panama. 20mm. Photo by G. Thomas Watters.



Favartia cirrosa (Hinds, 1844) Panglao Island, Philippines. 24mm. Photo by G. Thomas Watters.

MURICINAE

- Murex* s.s. - 31-33
- Promurex* - 1
- Haustellum* s.s. - 6-10
- Vokesimurex* - 33-34
- Bolinus* - 2
- Chicoreus* s.s. - 7-8
- Triplex* - 49-51
- Siratus* - 17
- Rhizophorimurex* - 1-2
- Chicopinnatus* - 3
- Phyllonotus* - 8
- Naquetia* - 5-7
- Chicomurex* - 6-7
- Hexaplex* - 19-21
- Pterynotus* s.s. - 27
- Pteryomarchia* - 7
- Pterochelus* - 7
- Purpurellus* - 3
- Ponderia* - 6
- Prototyphis* - 3
- Poirieria* s.s. - 5
- Paziella* - 6
- Pazinotus* - 11
- Panamurex* - 4
- Flexopteron* - 2
- Aspella* - 17
- Dermomurex* s.s. - 18
- Gracilimurex* - 2
- Takia* - 6
- Trialatella* - 8
- Viator* - 3
- Calotrophon* - 3
- Attiliosa* - 10

Muricinae subtotal: 336-352

MURICOPSINAE

- Muricopsis* s.s. - 19
- Risomurex* - 18
- Pradoxa* - 2
- Murexsul* - 26-27
- Acanthotrophon* - 4-5
- Murexiella* s.s. - 35
- Subpterynotus* - 2
- Homalocantha* - 15
- Maxwellia* - 2
- Favartia* s.s. - 32-34
- Caribiella* - 4
- ?Pygmaepterys* - 20
- ?Bizetiella* - 3

Muricopsinae subtotal: 182-186

TYPHINAE

- Typhis* s.s. - 5
- Typhina* - 15
- Rugotyphis* - 1
- Talityphis* - 4
- Typhisala* - 3
- Typhisopsis* - 2
- Typhinellus* - 4
- Haustellotyphis* - 1
- Siphonochelus* s.s. - 23
- Laevityphis* - 4
- Distichotyphis* - 1

Typhinae subtotal: 63

TRIPTEROTYPHINAE

- Pterotyphis* s.s. - 3
- Tripterotyphis* - 7

Tripterotyphinae subtotal: 10

ERGalATAXINAE

- Cronia* s.s. - 3
- Usilla* - 1
- Ergalatax* - 9
- Cumella* - 1
- Muricodruga* - 4
- Pascula* - 8
- Spinidrupa* - 1-2
- Maculotriton* - 2
- Lataxiena* - 6
- Orania* - 26
- Cytharomorula* - 5
- Trachypollia* - 4
- Xanthochorus* - 3
- Phyllocoma* - 2
- Galfridus* - 2
- Cinclidotyphis* - 1
- Phrygiomurex* - 1
- Daphnellopsis* - 3
- Lindapterys* - 2
- Uttleya* - 2

Ergalataxinae subtotal: 86-87

OCENEBRINAE

- Ocenebra* s.s. - 6
- n. subgen.* - 1
- Hadriana* - 1
- Genkaimurex* - 2
- Ocinebrina* - 21
- Jaton* - 3
- Ceratostom*
- Pterorytis* - 1
- Pteropurpura* s.s. - 15-16
- Calcitrapessa* - 1
- Porofteron* - 4

(Continued on page 6)

ONE LAST LOOK AT THE MURICIDAE (Continued from page 5)

Ocenebrellus - 5
Nucella s.s. - 11
Acanthina - 2
Acanthinucella - 6
Trochia - 1
n. subgen. - 2
Forreria s.s. - 1
Austrotrophon - 3
Zacatrophon - 1
Chorus - 1
Urosalpinx - 6
Vaughtia - 6
Roperia - 1
Eupleura - 7
Crassilabrum - 1
Chicocenebra - 1
Vitularia - 2
Lepsiella - 6
Haustrum - 3
Bedeve - 4

Ocenebrinae subtotal: 131-132

RAPANINAE (aka THAIDINAE)

The plethora of monotypic (or almost so) genera suggests that either we are cutting things too fine, or this is an extremely diverse group.

Rapana - 3
Purpura - 3
Plicopurpura - 2-3
Concholepas - 1
Nassa - 3
Pinaxia - 2
Vexilla - 2
Thais s.s. - 4
Tribulus - 2
Neorapana - 3

Vasula - 1
Reishia - 2
Dicathais - 1
Cymia - 1
Stramonita s.s. - 13
Thaisella - 13
Agnewia - 1
Acanthais - 1
Taurasia - 1
Semiricinula - 2-19(!)
Mancinella s.s. - 4
Thalessa - 9
Morula s.s. - 18
Azumamorula - 1
Oppomorus - 1
Neothais - 3
Habromorula - 15
Drupa s.s. - 5
Ricinella - 4
Drupina - 2
Drupella - 6

Rapaninae subtotal: 129-149

TROPHONINAE

The Trophoninae are a nightmare! The group is badly overnamed, and even the assignment of species to the Trophoninae vs. Buccinidae, which in many cases have a very similar shell morphology, is by no means certain. In fact, it is not even sure that there is such a thing as a subfamily Trophoninae; the group is certainly polyphyletic, and right now is a "wastebasket" for lots of odds-and-ends that do not fit anywhere else. Included in the maximum number are many taxa that are known synonyms, but also many that just "might be"

synonyms. So, these numbers represent truly "ball-park" guesses. This is a group that the next generation will have to sort out.

Trophon - 21-45
Xymene s.s. - 13-23
Zeatrophon - 9-16
Xymenopsis - 4-32
Paratrophon - 6
Fuegotrophon - 2-8
Coronium - 3-4
Boreotrophon s.s. - 36-64
Pagodula - 7-26
Nodulotrophon - 4-8
Trophonopsis s.s. - 27-57
Apixystus - 8-10
Nipponotrophon - 5
Benthoxystus - 1
Abyssotrophon - 13-21
Leptotrophon - 22
Conchatalos - 4
Ocenotrophon - 1
Scabrotrophon - 8-13
Tromia - 1
Chathamidia - 2
Xenotrophon - 1
Litozamia - 2-4
Anatrophon - 4-5
Minortrophon - 4-5
Comptella s.s. - 3
Afritrophon - 5
Incertae sedis - 4-5

Trophoninae subtotal: 221-399

GRAND TOTAL

Minimum = 1158; Maximum = 1378

Harald Alfred Rehder

June 5, 1907 - November 10, 1996

We regret to announce that Harald Rehder, Zoologist (Emeritus), in the Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution, passed away on November 10, 1996. Dr. Rehder served as a curator in the NMNH for more than 40 years before retiring in 1976. He published over 140 papers and, although he had broad research involvement in malacology, he was especially renowned as an authority on the taxonomy and biogeography of marine mollusks of the southern Indo-Pacific. Dr. Rehder was a consummate curator: not only did he help build the huge collection of mollusks at the USNM through his extensive fieldwork (especially in the Pacific), but also he updated the entire

collection several times. Dr. Rehder had many societal affiliations. In malacology, he served as AMU President in 1940 and was honored as a life member of that organization in 1977. The world of malacology is saddened by his passing and grateful for his contributions over many decades and his friendship and assistance to colleagues, amateurs and students.

Dr. Rehder is survived by his son, Alfred, and daughter, Anne. They have requested that, in lieu of flowers, contributions be made to the American Cancer Society in Dr. Rehder's name.

—Robert Hershler,
 National Museum of Natural History

In Memoriam

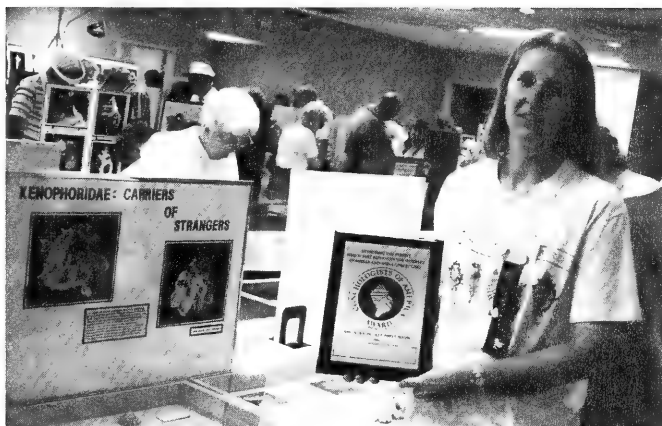
Joan Caldwell

Tom Rice now has the 1996-97 *Sheller's Directory of Clubs, Books, Periodicals and Dealers* and the 1996 *Checklist of Mollusks on Postage Stamps* available. Watch also for the *Directory of Conchologists/Malacologists* in mid 1997. And

PLEASE get your entry to Tom: Of Sea and Shore Publications, P.O. Box 219, Port Gamble, WA 98364 360-297-2426; ofseashr@pacific.telebyte.com

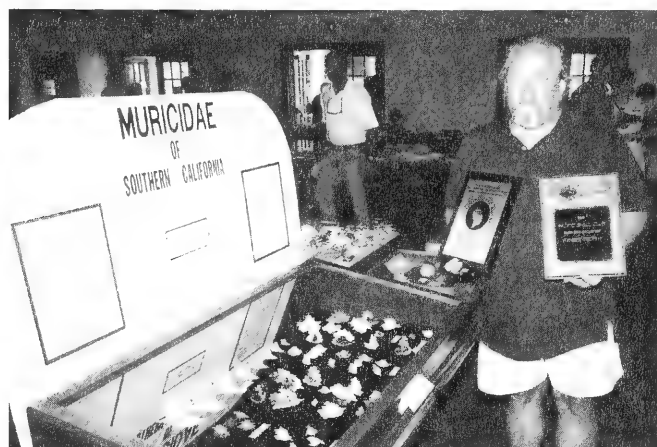
COA TROPHY WINNERS

edited by Charlotte Lloyd



"Xenophoridae — Carrier of Strangers" won a COA Trophy for Vicky Wall at the Jacksonville Shell Show held August 8-10, 1996. Her exhibit of 10 cases of worldwide *Xenophora* bedecked with shells, corals, rocks, bryozoans and even glass, showed why this family is a favorite of many. When presented with the award, Vicky happily exclaimed, "I'm so excited to win my first COA Trophy!" Well-deserved and congratulations, Vicky!

Photo by John Fatu



Charles Waters holds the COA Trophy in front of his winning exhibit, "Muricidae of Southern California." Charles won the trophy at the Pacific Shell Club Show in April, 1996. His exhibit of Muricidae, collected between San Diego and Santa Barbara, also won the Pacific Shell Club's Best Self Collected Trophy. Nice work, Charles! Photo by Danny Yoshimoto



Jake and Sylvia Dominey are the pleased winners of the COA Trophy for their fine exhibit, "Shell Shapes," awarded at the Central Florida Shell Show, held in Orlando September 28-29, 1996. Their exhibit examined molluscan form and function and how the shell has been utilized for art objects, architecture and heraldry. Our congratulations to the Domineys for their excellent work.

"Reefs, Wrecks and Rubble" was the title of Peggy Williams' COA Trophy-winning exhibit at the Naples 1996 Shell Show. The exhibit was comprised of shells collected by SCUBA off Florida's West coast from 1970 - 1995. Using her diving skills and years of experience, Peggy put together a really fine exhibit.

Photo by John Fatu



The Keppel Bay Shell Show awarded the COA Trophy to Des Hinton in mid-July. His exhibit, entitled "Shells with Colorful and/or Unusual Apertures," presented a variety of mollusks from many different families, all with the aperture up for a different twist and interesting theme.

Our Brazilian Connection:

A SPECIAL WAY TO DREDGE

by José Coltro

Some years ago I took a new dredge to my divers in Guarapari, Central Brasil. I had dredged along the Sao Paulo coast, in southern Brasil and I had found there some very good material: *Trophon pelseneeri* E.A. Smith, 1915, *Typhis clerii* (Petit, 1842), and other interesting species, and I was expecting to begin receiving some really unusual material from this new area, where the sea is more tropical than the coast near where I live.

When I went with the boat to dredge, while in Guarapari, the sea was rough and dredging was very difficult. I left the city shortly thereafter, and returned home to Sao Paulo, expecting new shells as soon as possible.

When some time had passed and I had received no news from them, I called to find out what was going on. They told me that it was really hard to dredge, especially when they had to pull the dredge by hand, which is the way I normally dredge here in Sao Paulo. I insisted that they continue using the dredge and they finally sent me some shells: some interesting Turridae and bivalves were collected. But everything they sent was below my expectations. When I told them so, they again complained about the difficulty of operating the dredge. And again I insisted that they use it.

Finally, a number of weeks later, I received a bag with some really unusual material, some gorgeous *Calliostoma echinatum* Dall, 1881; *Chlamys benedictii* (Verrill & Bush, 1897); *Dermomurex oxum* Petuch, 1979; *Muricopsis oxossi*

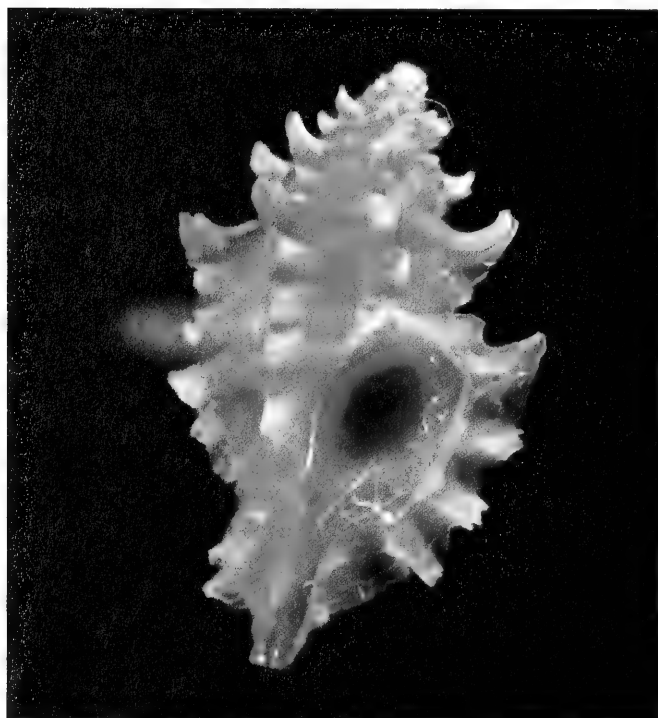
Petuch, 1979; *Vexillum kaicherae* Petuch, 1979; and many others species. Besides those species, some undescribed ones were found. The results were great and I was very pleased.

I decided to go back to Guarapari to see how they were working so well. I had a big surprise: my best diver, Alfredo Bodart, had invented a new way to dredge. First, he left the metal dredge on the sea bottom (using it as I had insisted), and with his hands he filled it with the substrate! A few days later he stopped using the metal dredge and he dived with some large bags. He piled the substrate directly in those bags so he could take a better look at the grit at end of the day when he was back in port.

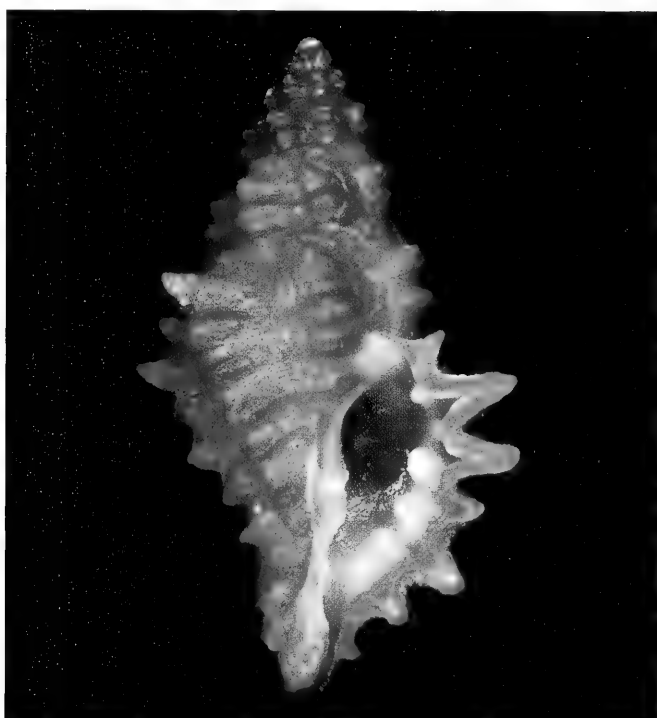
Here, in Brasil, we love to joke with Portuguese people (and vice-versa) and so I gave Alfredo's "dredging" technique the name, "Portuguese Dredging"! Now, in each new delivery, I receive some surprises. One of these unexpected species has been named after Alfredo: *Pazinotus bodarti* P.M.S. Costa, 1993, a very beautiful Muricidae.

Probably it isn't the best way to dredge. There are lots of limitations, especially about depth and safety, but it has turned out to be a great way to obtain some good material. Alfredo has a depth limit to "dredge," about 30 meters, and he follows this limit very carefully. Another good thing about this method is that this "Portuguese dredging" is ecologically correct: since only a very small part of the sea bottom is touched there is not much damage!

CX.P. 15259, Sao Paulo CEP 01599-970 Brasil.
Email: femorale@br.homesopping.com.br



Pazinotus bodarti P.M. Costa, 1993.



Muricopsis josei Vokes, 1994.

Franckly Speaking:

IN PRAISE OF TRADING

by Franck Frydman

Some collectors only buy, some buy and trade, and maybe, though I have never heard about any, some only trade.

It is extremely easy to compare the two ways of obtaining our treasures and to analyze the pros and cons. Funnily, there are nearly two words in "purchase": "purse" and "chase." As a matter of fact, you can chase shells with your purse. First come, first served when you attend a bourse, and you only need a well-lined wallet to get everything you want, unless you have tough competitors who want what you want right before you. Purchase is the easiest and fastest way to build a collection: start to buy single shells or even already-made collections which will quickly fill your drawers and showcases. Just snap your fingers and you have what you want, a huge collection gathering small ones.

"You want my shells, I want yours; let's do something together." This is the basic principle of trading. You can use your spare shells — whether they belong to families you do not collect, or you've obtained a better specimen, or you just decide you have too many of that species. It is far easier to give money (when you have it!) for a shell you covet than to come up with another of the same rarity to exchange for the shell you want. Here the rule is not the one of supply and demand but the one of . . . desire! You do not need money at all, just patience and tenacity, sometimes a huge quantity of both for — I must admit it — trading at times can be arduous, boring and tiring. It also needs effort: writing, packing, corresponding with other traders. Of course you will always have to buy some shells, when they are not available by trading or you do not have the right shells to get them by exchange.

The pros for buying? When you are satisfied with buying your shells, you use the fast and easy way and you need only money. The drawback? You simply amass shells and your collection will only be an accumulation of shells, with a vast majority of standard shells, and a minority of exceptional specimens if you buy collections from time to time.

If you exchange, you use the slow and occasionally uneasy way which sometimes needs effort. However, your collection will be dynamic, since there will be a steady turnover of specimens; and the quality level should be higher, for you should be able to "skim" your collection to eliminate shells

Franck, our foreign correspondent from Paris, can be reached at 3, Rue Dupuis, Paris, France 75003.

THE R. TUCKER ABBOTT VISITING CURATORSHIP

According to an announcement recently published by Dr. José H. Leal, Director of the Bailey-Matthews Shell Museum, a new visiting curatorship has been established in the name of Dr. R. Tucker Abbott, who was founding director of the museum until his death last November. This new program, in accordance with Dr. Abbott's wishes, will enable scholars to visit the museum for one to two weeks to conduct research and field work, during which time the Visiting Curator will assist with curation of portions of the collection, advise the museum staff on management of the collection, and provide a lecture for the public and a seminar for staff and volunteers. The stipend will be \$1500.

Questions about the 1997 R. Tucker Abbott Visiting Curatorship should be directed to Dr. Leal at (941) 395-2233.

which are too "standard." Disadvantages? Exchanging takes time, and you can't get everything by exchange.

At this point perhaps you think you have all the arguments to decide which way is the best one for you to build your collection? Well, how about some philosophy?

When you buy a shell you simply give money for it, just a cold, commercial transaction. All you get is a nice addition to your collection. When you trade shells you have the same pleasure of attractive additions to your drawers, sometimes very rare or difficult-to-obtain shells . . . but there's more, since you have human relationships with other traders. In a shell bourse you have the pleasure of trying to tempt, seduce and convince somebody to trade with you. It is a kind of game and there are TWO winners if you succeed. And if you fail, well, it was a nice try. . . keep in mind that even though you want everything (it's human!) you cannot get everything. Next time you will succeed, and the beautiful shells you already have are more important and numerous than that one you missed.

When you trade with correspondents, you don't see the shells which are offered, so you get. . . MORE! How come? You can imagine them, wait for them, desire them, kind of like a blind date. And when you unpack the parcel which has at long last arrived, you are full of excitement, and you most often discover you feel a strong pleasure and a deep satisfaction. Sometimes there is disappointment, but with a fair correspondent you can always send back a shell you do not want to keep. But when the shell is what you expected . . . or sometimes even better . . . bingo!

As a cone collector, I had dreamed of a beautiful *Conus adamsonii* for twenty years before I had the opportunity to get one by exchange. I negotiated, waited, got it, a fantastic, marvelous shell. Now that I have it in my drawer, it is as fantastic as when I first saw it, but I must admit that all the process of getting it, including the wait, was at least as much pleasure as possessing it.

Desire and anticipation keep us alive, I guess. The best part of going on a date with someone you love, a French (of course!) author said, is when you climb the stairs . . . I won't go into this now, except to say that waiting for something while fancying it is surely not the least of pleasures. That is why I exchange shells as often as possible. And if there is one thing I would not trade, it is trading.

CLAMA MEETS NEXT OCTOBER

Speak Spanish? Frequent Southern California? Just hanker to visit Mexico? Here's your chance to do a little malacology too: The Third Latin American Congress of Malacology (III CLAMA) will be held next October 13-17 in Ensenada, Baja California, Mexico just 100 kilometers south of the U.S. border. That's within driving distance (not really easy driving distance, given Baja's roads, but hey, we're adventurous!) of San Diego. The science should be interesting and the climate is Mediterranean in this Pacific coast seaport. Topics include something for everyone: General Malacology, Taxonomy, Biology, Phylogeny, Archeology, Paleontology, Genetics, Pathology, Ecology, Fisheries and Culture.

For further information write M.C. Claudia Farfán, P.O. Box 430222, San Diego, CA 92143-0222 USA Email: IIIclama@cicese.mx Phone: (61)74-5050 ext. 24300.

HOW DEEP IS DEEP?

Or Museum-Hunting for the Deepest Atlantic Mollusks.

by José H. Leal, Ph.D.

Questions often arise concerning the distinction between "shallow-water" and "deep-water" shells. Where should we draw the line between deep and shallow water? Although we use these expressions very often in shell collecting and other natural history contexts, there is not a well-established, all-purpose boundary separating "shallow" from "deep." The terms are usually used in comparative situations. For instance, for someone who collects shells on the beach or at low tide, deep-sea species may be those that are not easily collected on the shoreline or on exposed sand flats. For them, deep-water species may be rarer species that require more sophisticated collecting methods, including snorkeling, SCUBA, or dredging.

Although there is not a rigid rule validating this, scientists may use "shallow-water" to indicate species living on the continental shelf bottom. The shelf is the area of ocean bottom that is just a continuation of the continental mass, usually extending to depths between 150 and 300 meters (or 500 and 1,000 feet.) Marine biologists like to use the term "sublittoral species" for organisms that live on the continental shelf; true "deep-water species" would appear only below that depth limit. "Deep-water" bottoms can be further subdivided into the archibenthic or bathyal zone (between 300 and 3,000 meters, or 1,000 and 10,000 feet), the abyssal zone (between 3,000 and 6,000 meters, or 10,000 and 20,000 feet), and the hadal or ultra-abyssal zone (below 6,000 meters, or 20,000 feet). The latter category includes only areas of submarine trenches, where the ultimate deep-water species are found! The deepest point of all oceans, about 11,000 meters (36,000 feet), is located in the Marianas Trench, western Pacific Ocean.

Upon my return to South Florida in 1994 following a two-year postdoctoral appointment at the Smithsonian Institution's Division of Mollusks, I went to work at the University of Miami's Rosenstiel School of Marine and Atmospheric Science (RSMAS). In my search for "deep-water" (bathyal and abyssal) mollusks on the shelves of the University's Marine Invertebrate Museum, I ran into several big five-gallon jars, all filled to the rim with pieces of wood, seagrass blades, seeds of land plants and, curiously enough, coarse chunks of rusty metal that looked like the solidified remains of molten lava. All of that was immersed in alcohol and, after almost 30 years of maceration, the concoction had turned into a solution the color of dark tea.

As I started to empty the contents of the big jars onto sorting trays, the key to the mystery appeared in the form of little tags with capital letters and numbers. The University of Miami station "numbers" are always preceded by one or two initials. The letters stand for the names of their now legendary research vessels; the numbers represent stations. Their well-kept station records disclosed all the information I needed: location, including latitude and longitude, dates, depths, personnel working on board, kind of gear used (mostly big deep-sea trawls), all indicating exactly in what part of the world's oceans the samples were obtained. The pickled plant material came from the floors of the Cayman and Puerto Rico trenches, in the Caribbean region! As I carefully sorted through the alcohol-preserved plant material under the microscope, I finally found what I was so eagerly looking for: small, white, yellowish, or brown limpets, with a maximum size of about a quarter-of-an-inch in length. And what a surprise! According to

the station records of *R/V Gilliss*, the material from station GS-109 in the Puerto Rico Trench, a trawl haul obtained at 8595 meters (28,000 feet) and yielding many limpet specimens, came from near the deepest spot in the Atlantic Ocean! Although shallower than the Marianas Trench, the Puerto Rico Trench is as impressively deep as Mount Everest is high.

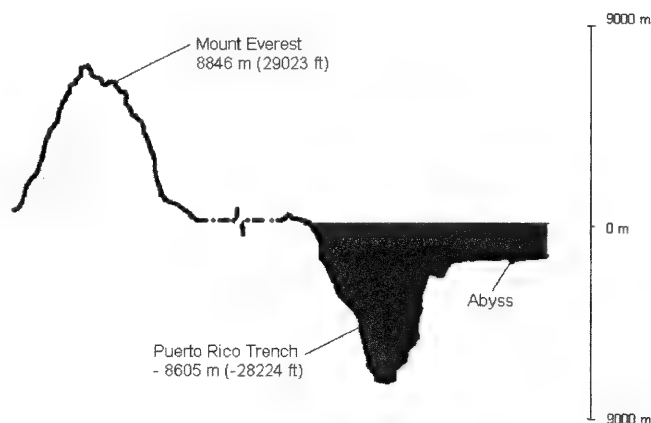
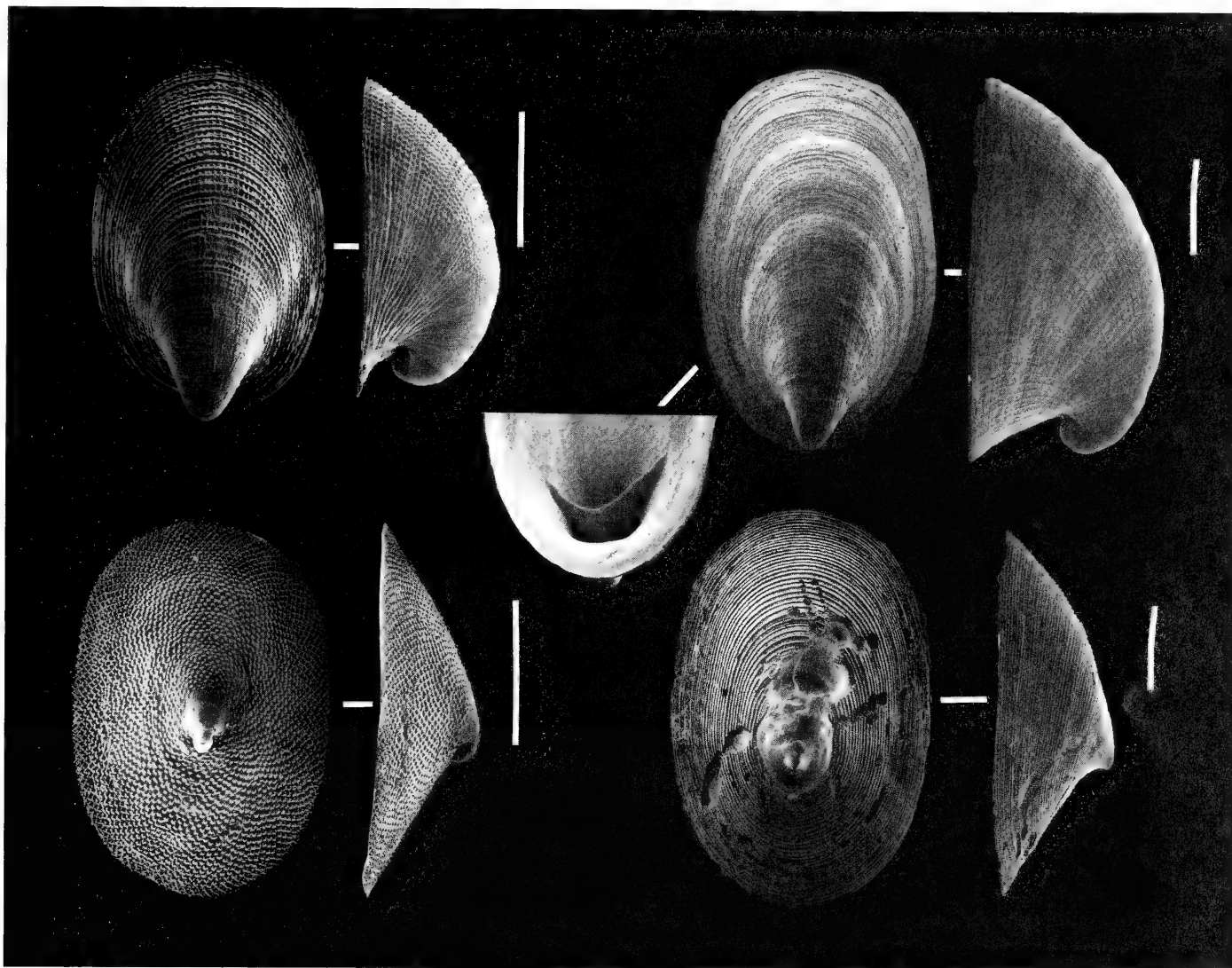


Diagram comparing depth of the Puerto Rico Trench and altitude of Mount Everest. Horizontal distances not to scale. Mount Everest

The Cayman and Puerto Rico trenches basically represent tectonic plate boundaries, or areas of the ocean floor where the gigantic individual plates that cover the Earth's surface are in contact, colliding or sliding past each other. As a result, earthquakes and volcanic activity abound at and near trench areas. Submarine volcanic activity produces the rusty, metallic nodules I found inside the jars. These are usually blends of iron, manganese, and other minerals.

Trenches are frequently close to tropical islands, and there is steady accumulation of plant debris falling from these nearby land, mangrove, and seagrass environments onto the trench floors. It is by a fortuitous combination of circumstances that herbivorous hadal limpets like the ones I had found are furnished with a permanent supply of plant food. Mollusks living in the less-populated, shallower abyssal zone (between 3500 and 6000 meters, or 11,500 and 20,000 feet), must depend upon the "rain" of occasional fish carcasses and other animal debris falling from the upper layers of the water column (in the case of scavenger species), or upon random encounters with prey (in the case of predators). So it seems somehow ironic that mollusks living in the very deepest parts of the oceans must rely on food coming directly from land or from very shallow water areas! That situation represents a kind of "short circuit" in the classic ecological model for deep-sea food webs. Most descriptions of deep-sea food-webs involve a large number of feeding levels based on the large physical distance separating primary producers (plants, which are absent in the dark deep-sea) from predators and scavengers, and the absence of herbivore groups such as keyhole and true limpets.

After a couple of years of studies, and with the help of my colleague, M.G. Harasewych, curator of mollusks at the



Smithsonian Institution in Washington, D.C., and, like myself, also deeply (!) involved with this type of mollusk, I prepared a manuscript summarizing the results of our research. The work we did was funded in part by a 1995 COA Research Grant Award I received. All limpets found at the RSMAS Museum can be grouped into four species belonging to two different families in the Order Cocculiniformia. The Cocculinidae are *Fedikovella caymanensis* Moskalov, 1976 and a new species also belonging to a new genus; the Pseudococculinidae are *Caymanabyssia spina* Moskalov, 1976, and *Amphiplica* new species. The two named species were first found by Lev Moskalov, from the Russian Academy of Sciences, after extensive field work carried out in the early 1970s by Russian research vessels in the Caribbean Sea. All four species are fully adapted to their ultra-deep-water lifestyles. They lack eyes, for there is no light available for vision; instead, they rely on smell and touch, having batteries of cilia, or miniature tentacles, near or around their mouths. They are equipped with sturdy radulae capable of scraping the hard wood or other plant material. Their shells are covered by very thick periostracums that help protect the calcium carbonate underneath from the chemical attack of acids present in the surrounding water. The organic protein content in their shells is also higher than in

Top: Family Cocculinidae; left, *Fedikovella caymanensis* Moskalov, 1976, Cayman Trench; right, new genus, new species; inset in the center shows internal apical septum. Bottom: Family Pseudococculinidae: left, *Caymanabyssia spina* Moskalov, 1976, Cayman Trench; right, *Amphiplica* new species. All scale lines = 1 mm.

other gastropods, a resource that further enhances protection against shell dissolution by acids. Cocculiniform limpets are hermaphroditic, each animal having both female and male reproductive systems. Finding a mate can be difficult in deep-water conditions, and hermaphroditism ensures that when one mating event occurs, two animals are fertilized through mutual cross fertilization, thus increasing the chances for perpetuation of the species.

The ultra-deep-sea limpets certainly compelled me to reevaluate my notions about deep-water mollusks and to stimulate me to research one of the last frontiers of the world's ocean.

PUBLICATION NOTICES:

Common Seashells of Coastal Northern Queensland
by Patty Jansen

A handy identification guide of 200 of the most common shells found on beaches in northern Queensland. It will be published in late 1996/early 1997. It is in easy A5 format, so you can take it with you to the beach. All the species are illustrated in colour (four plates), or with Patty's exceptionally fine black and white line drawings. The guide isn't intended for any group in particular, but naturalists and shell enthusiasts, students and tourists will find it equally useful. And because text is limited to a few lines per species and contains very little jargon, it will also be useful for people who know nothing about shells. The price is expected to be about \$15 (with reductions for bulk orders). Patty, who was the cover artist for the September *American Conchologist*, also has a set of 4 note cards featuring her drawings: *Murex kerslakei*, *Latiaxis mawae*, *Chicoreus longicornis* and *Columbarium hedleyi*, dark brown on a marbled light brown background. They'll be about \$5, also with reductions in price and postage for bulk orders. Send orders or inquiries to Filejest Pty, Ltd., 11 Eden St., Belgian Gardens, Q'ld 4810 Australia. phone/fax (int'l) 61-77-727743. Email: filejest@internetnorth.com.au

The Eastern Oyster: *Crassostrea virginica*. Victor S. Kennedy, Roger I. E. Newell, and Albert F. Eble, editors. Maryland Sea Grant College, College Park, MD, xvi + 734 pp. 400 photographs, drawings and diagrams. 8 1/2" x 11" format. \$95 U.S. + \$3.50 shipping.

The first comprehensive review of the biology of the eastern oyster since Paul Galtsoff published his landmark work, *The American Oyster*, in 1964. *The Eastern Oyster* does not replace Galtsoff's work as much as it is a complement, bringing up to date some of the remarkable advances that scientists have made in our understanding of oyster biology, covering topics that had hardly been studied before, and adding topics that Galtsoff did not cover — disease, genetics, larval settlement cues, and mechanisms of particle sorting, among others. (Note: A COA Grant funded some of the work by Melbourne R. Carricker on Chapter 3, *The Shell and Ligament*, a 100-page chapter that covers the larval shell, early dissoconch shell and adult shell.)

Order from Maryland Sea Grant College, University of Maryland System, 0112 Skinner Hall, College Park, MD 20742 or phone Merrill Leffler at 301-405-6374 or email leffler@umbi.umd.edu. There is also a home page for the book at: <http://www.mdsg.umd.edu/MDSG/PUBS/Oyster/index.html>

Freshwater Mussels of Texas. Edited by Robert G. Howells, Raymond W. Neck, and Harold D. Murray. University of Texas Press, Austin, TX, 244p, 144 color and 110 b/w illus., 52 maps. 8 1/2" x 11" format. Softbound. \$29.95 + \$3.00 s/h.

Freshwater mussels of the family Unionidae have inhabited fresh waters around the world for at least 400 million years. In Texas, the presence of these unique mollusks ensures our water quality, helps support the worldwide pearl industry and, in a quirk of history, influenced the founding of San Angelo. Yet their continued survival is by no means certain, due to overharvesting, environmental degradation, and the rapid spread of exotic mussel species.

To help professional biologists and amateur naturalists know and preserve these mollusks, this book provides baseline reference material for all 52 species in Texas. Color photos illustrate each species. Freshwater mussel anatomy, biology, ecology and

commercial uses are covered. (See also Bob Howells' article in the June *AmConch*, page 24, "The Tampico Pearlymussel (*Cyrtonaias tampicoensis*): Shades of the Old West.")

Another Turbonillid Contribution from Odé

"A List of Turbonillid Taxa from the West Coast of the Americas" joins the massive body of work Dr. Helmer Odé has produced on the family Turbonillidae through the past ten years in the twice-yearly *Texas Conchologist*, official publication of the Houston Conchology Society, Inc. Dr. Odé believes that close analogues exist between Panamic and W. Gulf of Mexico species, and hopes to facilitate research to discover them through construction of this list. Over 400 taxa are included, and Odé estimates 50% of them are synonyms. He has personally annotated the list and indicated synonymies where he deems appropriate. 36 pages including extensive bibliography.

Walter Sage's Last Work

Published late this spring in *American Museum Novitates* Number 3170, by Christopher B. Boyko and Walter E. Sage III is a 50-page illustrated paper, "Catalog of Recent Type Specimens in the Department of Invertebrates, American Museum of Natural History. II. Mollusca Part 1 (Classes Aplacophora, Polyplacophora, Gastropoda [Subclass Opisthobranchia], Bivalvia, and Scaphopoda)."

The American Museum of Natural History possesses 275,000 lots of Recent mollusks, so it is little wonder, amid this bewildering mass of shells, and after all these years, that specimens have gone missing or misplaced down through the years, some of these lost shells actually holotypes. The museum determined that such a state of affairs should not continue, and that a new catalog was to be made of their type specimens. Enter the persistent perfectionist, Walter Sage and his trusty co-worker, Chris Boyko. They conducted a veritable treasure hunt through the collections department of the AMNH, seeking lost and misplaced and sometimes seemingly mythical type specimens housed within its drawers and cabinets.

Anyone who knew Walter during his years as Senior Scientific Assistant at AMNH has probably heard him refer to the research that went into this work. It was among his passions. He even wrote an *American Conchologist* article about some of his detective work [20(4):25]. One by one he and his fellow sleuth Chris assembled this catalog, finding treasures as they went: "misplaced in this drawer," "found in a box of that species," "label in with another group altogether," was a frequent story. It was the type of detail work Walter loved best, and now it has come to fruition.

The paper makes interesting reading, particularly the introductory remarks, for anyone interested in museums, collections, or the history of shell collecting, as well as those concerned with the species treated. But it cannot hope to tell the tales of these finds with the enthusiasm or excitement with which Walter pursued his quest. Unfinished at the time of Walter's death, the manuscript has been completed and seen through the publication process by Chris Boyko, and is now available (May 23, 1996).

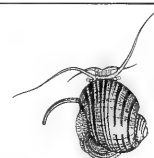
Old logo



The Malacological Society of London

by S.E.R. "Bill" Bailey

New logo



It seems strange to read recently that a journalist, searching for eccentric London-based societies to amuse his readers, had selected The Malacological Society of London. A society devoted to the study of molluscs from pure and applied aspects would, he thought, offer sanctuary to any Londoner who had ever had an impure thought about a mollusc. He was mistaken: although centered in London, the society is international, with half its members living outside Europe.

The Early Years

Many people ask why Britain has two societies devoted to molluscs — the Malac. Soc. formed in 1893, and the Conchological Society of Great Britain and Ireland founded 16 years earlier. In 1893, a growing number of professionals felt that Conch. Soc. was run by privileged amateurs whose set views did not meet their needs. Most of the founders of the Malac. Soc. were also Conch. Soc. members, as are some molluscan workers today, although Conch. Soc. has a larger following among amateurs and a greater emphasis on field meetings, while Malac. Soc. members are mostly professionals.

Another common question is why the Society's logo is the South American snail, *Pomacea canaliculata*, recently a pest of rice plantations in the Philippines. The original drawing from Alcide d'Orbigny's 1835 *Voyage dans l'Amerique Meridionale*, was repeated in S.P. Woodward's *Manual of the Mollusca* (1875). The first President, Henry Woodward, was S.P.'s brother, so probably the drawing was used simply because it was on a block of the right size and shape to fill a blank space. In 1989, the Society ran a competition for a new logo: the prize winning entry from David Reid was a redrawing of the original, based on a shell and operculum from the d'Orbigny collection in the Natural History Museum.

Meetings

For many years, the monthly evening meetings consisted mainly of electing new members, dealing with articles for publication in the *Proceedings* and exhibiting specimens — so, at a meeting in 1910, the Rev. A.H. Cooke exhibited a box of *Helix desertorum* collected six years previously and kept in the box without food until the previous day, when 16 specimens were found still alive. Today, the one-day meetings are frequently held in London, and although we have experimented with other venues, the London-based ones are more popular. The Centenary Symposium on the *Origin and Evolutionary Radiation of the Mollusca* in Autumn 1993 was a three day affair at the Natural History Museum attended by delegates from 25 countries, and the Centenary Dinner was held in Middle Temple Hall, virtually unaltered since it was built in 1562.

Meetings are often held in association with other Societies — the Linnean Society and the Conch. Soc. A recent topic was TBT Pollution: TBT, used in anti-fouling paints, has been described as the most poisonous substance ever deliberately introduced into the aquatic environment, causing impotence in dogwhelks and shape distortion of oysters, but the near-collapse of coastal ecosystems and oysterfarming appears to have been averted by effective legislation.

Publications

Many members belong primarily in order to receive the quarterly *Journal of Molluscan Studies*, produced since 1893.

Dr. S.E.R. Bailey, 3.614 School of Biological Sciences, Stopford Building,
University of Manchester, Oxford Road, Manchester M13 9PT, UK
email: billbailey@fs2.scg.man.ac.uk

Called the *Proceedings* until 1976, it remains a favoured place for the publication of taxonomic and anatomical works, but also contains ecological, physiological, evolutionary and applied studies — shellfish culture or control of molluscan pests — if the main interest is in the biology of the molluscs (the "pure" being favoured over the "impure"!). The occasional *Supplements* contain mostly monographs, such as *The Prosobranchs of Britain and Denmark*. The Centenary Symposium was published in 1996.

Meetings are reported in the Society's six-monthly newsletter, the *Bulletin*, which also contains news of future meetings, book reviews, and articles. As editor, I try to stop the articles getting too scholarly — for example by including news of the World Snail Racing Championships held each summer at a village fete in Norfolk. (The race is held by releasing snails from a central circle, and the winner is the first to cross an outer circle 13 inches away: the record is exactly two minutes.)

Responsiveness and responsibility

The 1960s and 1970s brought changes - thematic meetings, and members working through the Society with other European societies rather than as private individuals. "Unitas", the European Malacological Union, was one result, and the checklist, CLEMAM, is another. Two awards were instituted, an Annual Award for exceptionally promising initial contributions to the study of molluscs, and the annual Sir Charles Maurice Yonge Award for the best paper on bivalves appearing in the *Journal*. The Society also gives Centenary Research Grants: this year grants have gone to aid research in Mexico on the penshell *Atrina maura*, and a Toronto-based computer-graphic study of shell forms of *Lambis*.

Charles Darwin grumbled that a naturalist's life would be a happy one if he had only to observe and never to write. Writing distinguishes the professional from the amateur, but both are enthused by their subject. Initial enthusiasm is for the natural beauty of molluscs, but to this is soon added an appreciation of the beauty of their functional design (the "Wow!" of realising that cone shell's teeth have evolved into perfect fish hooks). Later the appeal comes from uncovering the abstract beauty (more prosaically called "systems analysis") by which sets of simple rules lead to the complex tent patterns of the cone shell or to the behaviour of a foraging slug. Malac. Soc. was founded to fulfill the needs of professional biologists, but the new integrative biology cuts across traditional boundaries of the old "-ologies". To meet the needs of the new generation, the Society must guide the integration of the many excellent "model systems" which molluscs provide into studies of evolution, ecology, behaviour and physiology. In also working to conserve molluscs worldwide, we shall constantly re-discover the natural, functional and abstract beauty which provide the stimulus for our work.

To apply for membership, write to the Treasurer, Dr. D. Roberts, School of Biology and Biochemistry, The Queen's University, Belfast BT97BL, Northern Ireland. The annual subscription is £32 or US\$ equivalent.



Conus textile pattern

CONCHATENATIONS

by Gary Rosenberg

NOTICE OF SEIZURE!

Someday soon you may receive a letter like this one, copied verbatim from one received by a COA member, except that names, places and dates have been changed:

NOTICE OF SEIZURE

This is to advise that the box of assorted mollusc shells imported by you via U.S. Custom - Foreign mailroom facility, New York, NY on January 14, 1997 has been seized by the U.S. Fish and Wildlife Service. The reason for this action is that the described wildlife was imported in violation of Philippine export laws. The Lacey Act prohibits the importation of any wildlife or wildlife related manufactured products, in violation of any foreign law.

Enclosed is a U.S. Fish and Wildlife Abandonment form. By signing and returning this form you are abandoning the seized wildlife and agreeing to its forfeiture to the United States. This action may be used as a basis for compromising any assessment of monetary civil penalty as provided for in Title 50, Code of Federal Regulations, Part 11.11.

You have ten days from the date of receipt of this letter in which to sign and return the U.S. Fish and Wildlife Service Abandonment form in the enclosed pre-addressed envelope. Failure to exercise this option will result in referral of the matter to the appropriate United States Attorney or Regional Solicitor for possible assessment of a civil penalty and/or forfeiture of the seized wildlife.

If we can be of further assistance, please contact Wildlife Inspector Smith at the above address or telephone number.

Shell collectors need to be aware of the many legal perils of importing and exporting wildlife. What follows is not legal advice, it is just my attempt to understand the regulations in the United States Code of Federal Regulations (CFR) 50. First some definitions, summarized from 50 CFR part 10.12, including revisions as published in the Federal Register 61(121):31850-31873 on June 21, 1996. Wildlife means any wild animal, alive or dead, including mollusks. Mollusk means any member of the phylum Mollusca, excluding fossils, and including manufactured and food products made from mollusks (there are special rules for pearls). Shellfish are aquatic invertebrates having a shell, including mollusks.

Here are some relevant sections of 50 CFR: No one may import or export any wildlife at any place other than a Customs Port of Entry (14.11). Designated ports are Los Angeles, San Francisco, Miami, Honolulu, Chicago, New Orleans, New York, Seattle, Dallas/Fort Worth, Portland, Baltimore, and Boston (14.12). Exceptions to the above can be made by permit (14.20), and for import or export from Alaska, Puerto Rico, Virgin Islands and Guam. Wildlife lawfully taken by U.S. residents in the United States, Canada or Mexico and imported or exported for non-commercial purposes may be imported or exported at any Customs Port of Entry (14.16c). Except for endangered or threatened species, shellfish taken in waters under the jurisdiction of the United States or on the high seas for recreational purposes may enter or exit at any Customs Port of Entry (14.21). Dead wildlife specimens can be imported or exported by accredited scientists or scientific institutions at any U.S. Customs Port, or by international mail (14.24).

There are some obvious problems here. It becomes illegal to send shells for personal use through international mail if not through a designated port. But the sender and recipient have no control over what port the mail goes through — that might depend on which airline has space available on what flight. A USFWS inspector in New York advised me that because of the way international mail is handled, their policy is that mail is not required to use designated ports. The inspector indicated, however, that technically one must

still submit a Declaration for the Importation or Exportation of Fish or Wildlife (Form 3-177) after import of specimens to the United States. In the case of export, Form 3-177 must be filed, except for wildlife that is not intended for sale where the value is under \$250.

Form 3-177 is obtained from your district USFWS office, and filled out with the scientific names, number of specimens of each species (genus or family names can be used if species identification is unknown) and countries of origin. The form is then sent to the district office, which will send it back stamped cleared, once they have determined that none of the listed species is subject to special regulation, such as being on the endangered species list. A copy of the form is then included in the package to be exported. Even for packages valued under \$250, a list of scientific names of species, number of specimens, and countries of origin should be included.

The rules are different for commercial import and export of wildlife, for which an import/export license is required. Until July 22, 1996, this license cost \$125 per year, but was not required if total value of imports and exports exceeded \$25,000. Now the license is \$50 per year, but is required regardless of the value of commercial shipments. Licenses are obtained through the USFWS district where the applicant resides. If a shipment is subject to inspection, the license holder is normally charged \$55; there is not usually a charge for inspection of non-commercial shipments. Commercial importers and exporters must get a permit to use non-designated ports. One of the criteria that the USFWS uses to determine whether a shipment is commercial or not is if it contains more than eight of the same kind of organism (presumably meaning species), but presumably this would apply to large shells individually wrapped, rather than vials or bags of small specimens.

In addition to complying with the U.S. rules for declaration when importing or exporting of wildlife, one must also comply with all local, state, federal and tribal laws in collecting and shipping specimens, as provided in the Lacey Act as amended in 1981. Thus, if a country requires an export permit for mollusks (e.g., the Philippines), a copy of that permit should be in the package that you import. If a country requires a collecting permit, a copy of that permit better be in the package. It can be almost impossible to find out laws for collecting and exporting mollusks in foreign countries, and one will often get contradictory answers. For example, I talked to three different U.S. Fish and Wildlife Inspectors in preparing this article, and got three different sets of interpretations of the designated port rule. (I've presented what seemed most consistent.)

There is one surprising way to get information about foreign laws — file a declaration on Form 3-177 before the package is sent to you. You will not get clearance to import specimens if the USFWS is aware of permits that you need from the foreign country. Once the necessary permits have been obtained, hopefully by the person sending you the specimens, you can resubmit Form 3-177 with copies of the permits. Note that getting clearance to import does not mean that USFWS is certifying that you have complied with foreign laws, just that there is not evidence that you have broken any. Another good reason to file Form 3-177 is that it establishes that you have attempted to comply with the law. Some museums are now refusing to accept donated collections if the collector cannot document that specimens have been legally obtained. The intent of the USFWS seems to be only to close the loopholes smugglers have found in previous regulations. However, in closing the loopholes, they hinder some of the normal activities of collectors (and scientific researchers). If they intended to try to stop people from collecting shells, hundreds of thousands of international packages marked "Contents, seashells for scientific study, no commercial value" would already have been confiscated. Unfortunately, maintaining that paper trail takes some of the joy out of the hobby.

KNOW YOUR MURICIDAE

By Betty Hunter

Our quizmaker extraordinaire, retired Latin teacher Betty Hunter, has been at it again! This quiz is for the Murex aficionados, and we'll bet they'll wish she'd taken on Murex when she was just getting started at this game. She's getting tougher as she goes! How did everyone do on the Conus Quiz? We heard a lot of moans and grumbings from out there in COA Land!

Note: Answers may include validly proposed names which have been relegated to synonymy, sub-specific names, and forms.

1. What species of the genus *Chicoreus* might be engaged in the timber industry?
2. What member of the genus *Dermomurex* would have a keen interest in the grain industry?
3. What member of the genus *Homalocantha* mentions a nocturnal arachnid with a venomous sting?
4. What species of *Dermomurex* might be an excellent proofreader of paragraphs?
5. What species of *Dermomurex* and *Aspella* each mention a different form of Egyptian architecture?
6. What member of the genus *Naquetia* immediately suggests a religious order of monks and a species of monkeys?
7. What rare species of *Pterynotus* suggests a lighthouse visible throughout the night?
8. What species of *Phyllonotus* suggests a two-family dwelling?
9. What murex suggests a person who is bat-brained or batty?
10. What murex suggests a fluent, clear speaker?
11. What *Murexiella* species name sounds like that of a serious liver ailment?
12. What species of *Siratus* sounds like the name of a southern state?
13. What species of *Favartia* names a mythical monster which was half-man and half-bull?
14. The genus *Aspella* boasts a set of twins. Homer describes one as good at boxing and the other as good at taming horses. Who are they?
15. What species of *Favartia* was almost certainly a pauper?
16. What species of *Aspella* is mysterious and often shows a perplexing brevity of expression?
17. What species of *Chicoreus* bears the name of the Greek goddess of hunting and wild animals?
18. What species of *Haustellum* suggests a woollen fabric usually made in a twill weave?
19. What genus and species of Muricidae names both the composer and title of a French opera?
20. What species of *Litozamia* is among Santa's most famous employees?
21. What species of *Chicoreus* reminds one of a religious order named after its founder?
22. What species of *Murexiella* appears to be a member of Spain's lower nobility?
23. What species of *Chicoreus* suggests a special kind of brown cardboard?
24. What species of *Haustellum* names a twentieth century U.S. President?
25. What species of *Nipponotrophon* names a monster slain by Perseus?

Answers in March 1997 issue.

PALAEARCTIC, FRESHWATER MEETINGS IN GERMANY

An International Congress on Palaearctic (that's Europe, NW Africa and N. Asia) Mollusca will be held in Munich September 1-4 1997, to focus on continental mollusca. Lectures by: E. Gittenberger, "Aims and perspectives of research on continental Mollusca"; V. Lozek, "Palaeoecology of quaternary Mollusca"; and Ph. Bouchet, "Endemism, endangerment and conservation." Lecture sessions, symposia and workshops and posters on systematics, ecology and biology of palaearctic mollusca.

This congress, organized by G. Falkner for Unitas Malacologia, will include an earlier two-part conference on the Ecology and Taxonomy of Freshwater Mollusca, the first part to be held in Salzburg, Austria, between 19th and 21st February 1997, and the second part between the 1st and 4th August 1997, in Munich. For further details and first-circular, please contact G. Falkner, Raiffeisenstrasse 5, 85457 Hoerlkofen, Germany, Tel/Fax +49-8122-93780. Email: Dr. S.A. Ridgway (ridgway@zi.biology.uni-muenchen.de) or Prof. Dr. D. Herm (100071.1711@compuserve.com)

Some Other Meetings and Symposia

For more information, please contact the editor.

Molluscs 97. Symposium on the molluscs of the Indo-West Pacific and Australasian region, 1-4 February 1997, Rottnest Island, Perth, Western Australia.

11th International Pectinid Workshop, 10-15 April 1997, La

Paz, Mexico.

American Malacological Union, 22-27 June 1997, Santa Barbara, California.

The Seventh Marine Sciences Latin American Congress, 22-26 September 1997, Sao Paulo, Brazil.

3rd International Abalone Symposium, October 1997, Monterey, California.

CALL FOR DONATIONS!

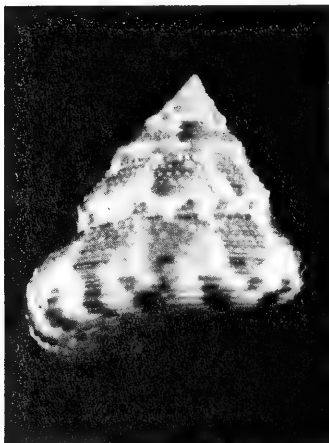
The Annual COA Auction will be on the afternoon of July 15, Tuesday. Please send your auction goods to:

Margaret Thorsen
1440 Middle Gulf Drive, # 3B
Sanibel, FL 33957.

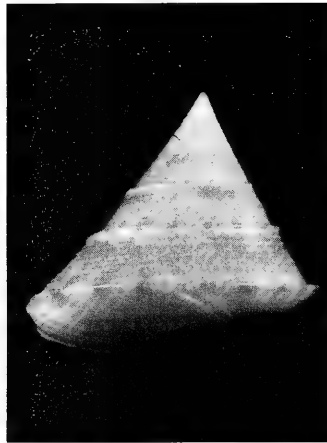
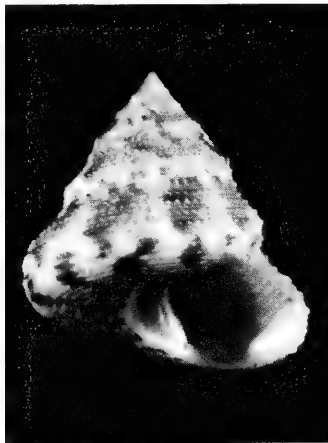
All materials submitted will be used for the Silent and Oral Auctions, as well as for door prizes and raffles. Remember that the funds raised by this auction make the COA Grants Program possible. COA has awarded \$50,960 in grants to malacology since 1985, and \$8,900 in 1996 alone. Your contributions and participation make this possible.

CARIBBEAN CALLIOSTOMAS Part II*

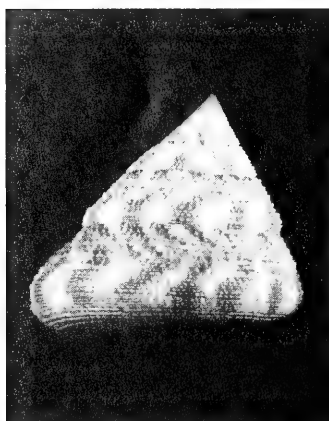
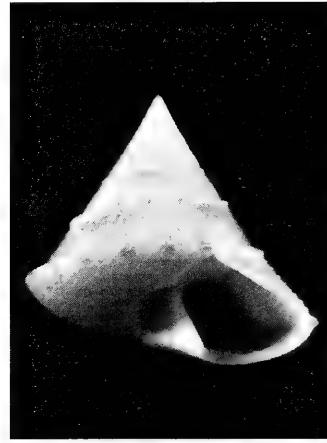
by Kevan and Linda Sunderland



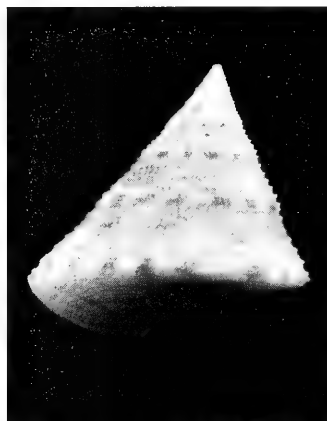
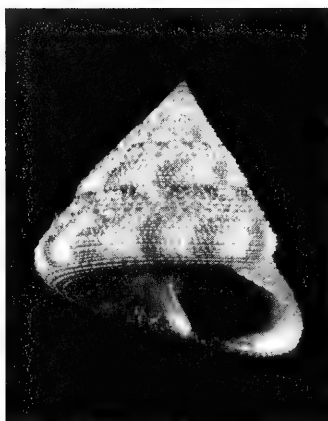
Calliostoma adpersum (Philippi, 1851). 23mm. 200' by shrimp, Cabo de la Vela, Colombia.



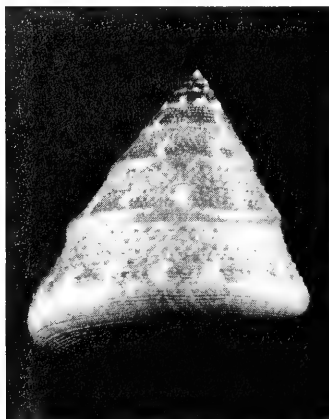
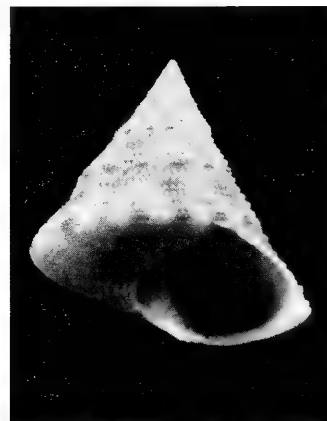
Calliostoma argentum Quinn, 1991. 22.5mm. 175 meters, off St. James, Barbados. PARATYPE



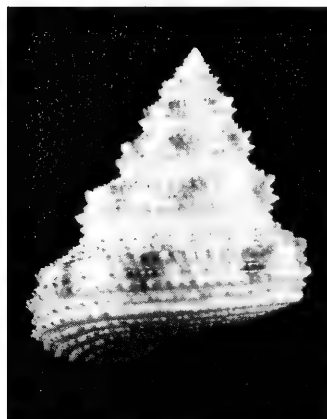
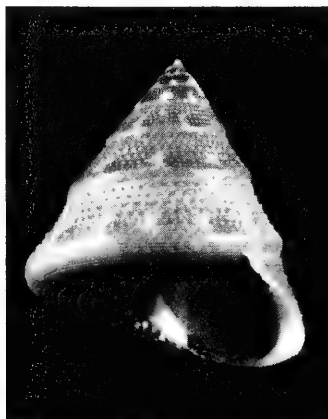
Calliostoma bullisi Clench & Turner, 1960. 31mm. 6 meters, North Ilhabela, Sao Paulo, Brazil.



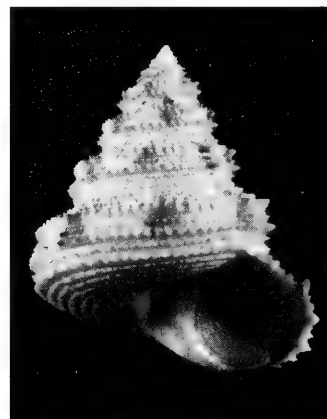
Calliostoma guesti Quinn, 1991. 27mm. 183 - 219 meters, 2.5 miles off south shore of Bermuda.



Calliostoma jujubinum (Gmelin, 1791). 32mm. 20', in reef rubble, Pickle's Reef, Key Largo, FL.

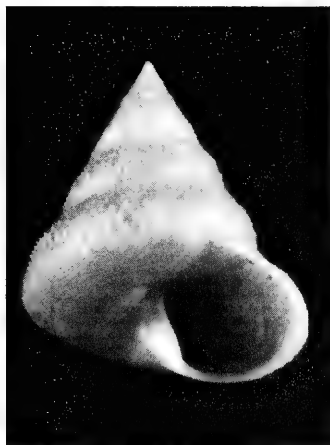
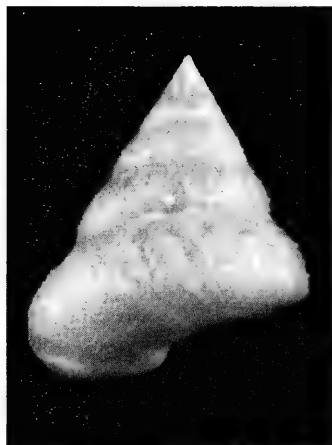


Calliostoma militare von Ihering, 1907. 32mm. 100', by fisherman, Bahia, Brazil.

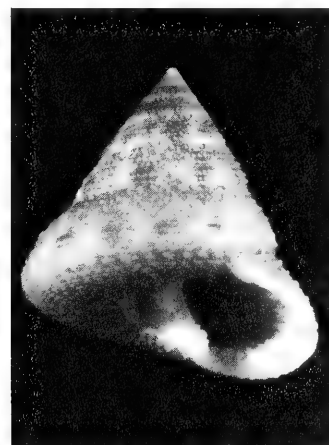
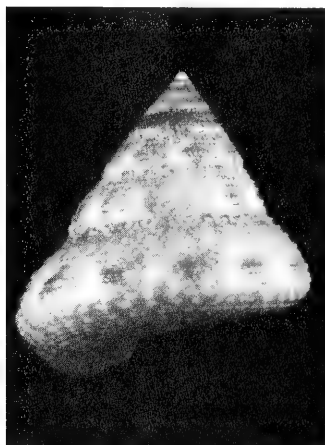


* See also "Caribbean Calliostomas Part I" in *American Conchologist*, 17(3): 12-13, September 1989.

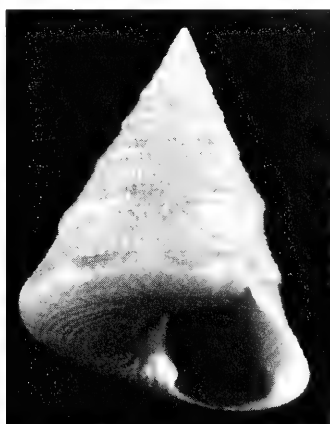
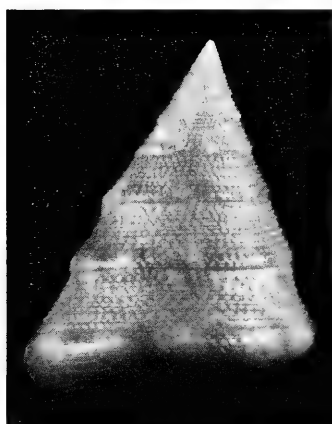
The intent of these centerfolds is not necessarily to distinguish valid or invalid species, but to provide illustrations of taxa not popularly available for the information of the collector.



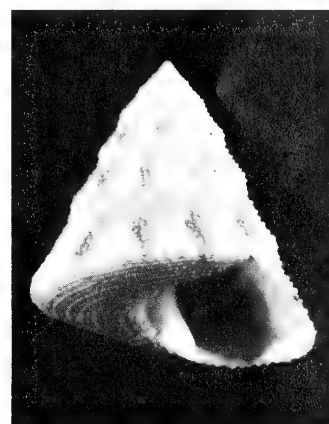
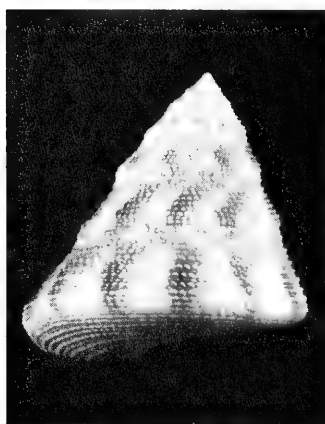
Calliostoma orion Dall, 1889. 18mm. 120' by SCUBA, San Salvador, Bahamas. Ex. Tom Stewart Collection.



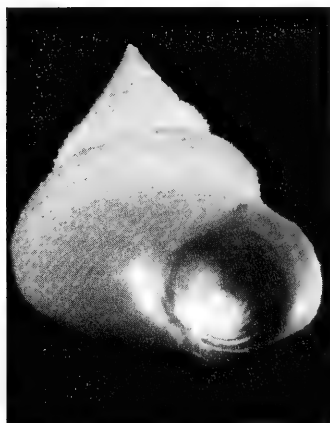
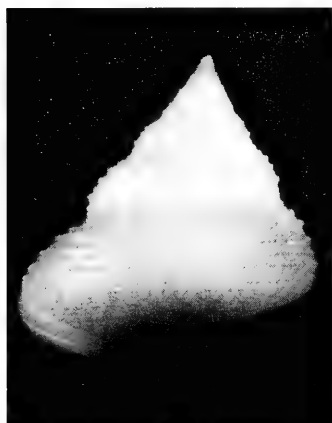
Calliostoma purpureum Quinn, 1991. 22mm. 200' by shrimp, Cabo de la Vela, Colombia.



Calliostoma scalenum Quinn, 1991. 28mm. 180-200 fathoms, off Key West, Florida by shrimp.



Calliostoma tampaense (Conrad, 1846). 23mm. 100', lobster traps in turtlegrass areas, Key West, Florida.



Calliostoma species. 13mm. 130' in reef, Guadeloupe, Lesser Antilles

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 Clench, W.J. and R.D. Turner. 1960. The genus *Calliostoma* in the Western Atlantic. *Johnsonia* 4(40): 1-80.
 Dall, W.H. 1881. *Report on the Mollusca, Part II. Gastropoda and Scaphopoda. Reports...on the Steamer BLAKE*. Bul. Mus. Comp. Zoo. Harvard. Vol XVIII. 1-492.
 Petuch, E.J. 1987. *New Caribbean Molluscan Faunas*.
 Quinn, J.F. Jr. 1992. New Species of *Calliostoma* Swainson, 1840 (Gastropoda: Trochidae), and Notes on Some Poorly Known Species from the Western Atlantic. *Nautilus* 106(3): 77-114.
 Quinn, J.F. Jr. 1981. The Gastropods, *Calliostoma orion* Dall, 1889 (Trochidae) and *Heliculus* (*Gyriscus*) *worsfoldi* n. sp. (Architectonicidae), from the Bahama Islands. *Nautilus*, 95(3): 150-156.
 Rios, E.C. 1985. *Seashells of Brazil*.

What's Happening on Conch-L?

Shell Values

Recently, a query about placing a value on your collection was the subject of much discussion on Conch-L. Some list subscribers thought 50% of dealer price was a good rule-of-thumb. Others thought selling their shells was beyond the realm of possibility, considering their love for them. But Guido Poppe, a dealer from Belgium, offered these thoughts, which may prove thought-provoking for many collectors:

The matter is very complex. The value of a collection, is, just as it is for a shell, exactly what one is willing to pay, at a given place, at a particular moment, for that particular collection. Objectively regarding the financial value, we can be more specific for a large majority of collectors. For example:

A *Harpa* collection

1. The collection contains all species (including *H. gracilis* and *H. goodwini*): dealers will instantly buy the collection at the price you bought it for, if you bought it at least three years ago.
2. The collection does not contain *H. gracilis* and *H. goodwini*, and all shells are of normal quality: very few dealers (or collectors) will buy it; the value is very small, because everybody has these shells already.
3. The collection contains exceptional specimens, large sizes, superb and rare colour forms, no *H. goodwini* and no *H. gracilis*: you can sell to dealers at half the price you paid.
4. The collection contains exceptional specimens, *H. gracilis* and *H. goodwini*: you will probably obtain a price much higher than the one you paid for the collection 3 years ago.

This is quite true for most popular groups of shells. What you get back has some similarity to banking money: if you put in very little money, a loss is probable; if you put in a modest amount, maybe you get it back. If you put millions, they will make more millions.

A *Cypraea* Collection

The cowry collector with 100 species, one of each, will probably lose. The cowry collector who has *mariellae*, *perlae*, *insulata*, *rosselli* orange, *connelli*, *lisetae*, left handed *capensis*, left handed *edentula*, a good series of live Mauritius *esontropia*, *oweni oweni*, *nymphae*, etc... will get more than he bought the collection for now.

Then we have the other types of collection: study collections mainly. Their labeling, as others have indicated, is hyper-important, but other factors enter in: deep water molluscs, from 600 m offshore Guadeloupe, will bring a higher

price than the ones collected on the beach in Florida. Land snails from the Comores will get a higher price than the ones from Belgium.

The subject is very complex, but I hope the above gives some guidelines.

Best regards, Guido

Common Names, Citing Authors, and Linnaeus

José Leal, Director of the Bailey-Matthews Shell Museum, responded to a query about shell names and authors with a host of interesting bits of information:

The International Code of Zoological Nomenclature indicates that "The name of an author does not form part of the name of taxon and its citation is optional, although customary and often advisable." [Article 51 (a), both in the 1985 and the new edition]. The new edition adds that it is "strongly recommended that the date of publication (and authorship) of a name be cited at least once in a work which deals with a taxon. This is particularly important for species-group epithets" [Recommendation 22A].

Other groups take the same approach to authority citation: the Council of Biology Editors Style Manual (1983, p. 185-186) recommends that: "In taxonomic articles the name of each genus, species, or subspecies mentioned should be supplemented with the name of its author." But: "the author citation needs to appear only once in an article with the first mention of the taxon." The usefulness of citing the authority for a given species resides simply in that an author's name and date of publication may convey a lot of information about that taxon. For instance, we may assume that shell species named by Linné (usually published in the tenth (1758) or twelfth (1767) edition of his *Systema Naturae*) should be relatively easy to obtain in their geographic areas, because collecting methods and general interest at the time of Linné were not as refined as in the 19th and 20th centuries (by the way, in taxonomic contexts, Linné's name should always be spelled in its latinized version, Linnaeus, as it appeared originally in his works.) Also, authorship citation may help clarify problems related to homonymies (same name applied to two different species.)

On the issue of common names, the volume on mollusks of the series *Common and Scientific Names of Aquatic Invertebrates from the United States and Canada* published by the American Fisheries Society recommends that common names should be in lowercase letters (not Florida Fighting Conch, but Florida fighting conch). This is also advocated by the Council of Biology Editors Style Manual.

LETTERS:

(To Bobbie Houchin, Treasurer)

Dear Bobbie,

...I have been reading with interest the article in "American Conchologist" about conservation and the future of shell collecting. Today, we the shell collectors and dealers in the Philippines suddenly find ourselves as the endangered species. Our congress has proposed a bill totally banning the exportation of shells. They specifically included shells for scientific study.

The bill already had three hearings but so far there was no strong opposition. Most people concerned were not notified. I

have already prepared my opposition papers using Dr. Gary Rosenberg's arguments and figures and will also challenge the constitutionality of the proposed bill. Others are also gathering signatures to oppose the bill.

We will let you know the verdict and wish us luck,

Manuel O. Montilla,

M & M Shell Shop

59 Maria Clara

Quezon City 3008,

Philippines.

Any shell collector who has ever collected live shells while traveling knows the implication of Marcus Coltro's title, "Stinky Tales." Decaying shells have an insistent way of announcing their presence in sometimes rather inconvenient circumstances. Here follows one of Marcus' own Stinky Tales for your amusement, inspired by his reading of shell cleaning tips on Conch-L. Perhaps you have a Stinky Tale of your own you'd like to share. Send it to the Editor for possible inclusion in the next issue of American Conchologist.

STINKY TALES

By Marcus Coltro

On our last day in Egypt, where we had been collecting for one week — great trip by the way — we found out that we wouldn't have time to properly clean all the stuff that we'd collected there. As we normally do with small shells, we put them in small containers (like Gatorade, for example) in a solution of 30 to 40% alcohol. A stronger solution than that would make the animal too hard to clean later. The larger shells and the cowries we try to clean at the site if possible. But in Egypt that wasn't so easy: the sink was too small and there was no water pressure on the tap. Of course we were very tired after snorkeling all day long, and by the time we got in the room we could hear our beds calling for us.... When we plan a trip we always say that we will collect only small and light shells. But what can we do when we see *Lambis truncata* 18 inches long, *Tectus dentatus* measuring 8 inches and other "small" goodies like that? We grabbed some big shells as usual. What happened then? I can explain with a formula:

Large Shell + large animal + no time to clean + no way to clean + long journey to home + stop in many hotels on the way back + airplane(s) + customs = BIG TROUBLE!!!!!!

Continuing our trip, we got some *Tectus dentatus* with the whole animal inside and put that in a plastic container together with sand. It worked perfectly to stop the smell (some people use cat litter). But when we were leaving the airport in Germany, we found out that the X-ray couldn't pass through the container. And to make it worse, we had some stainless steel wire to make tools for cleaning shells in the top cover of our suit case. In the x-ray it looked like the wire was coming from the container: the woman operating the X-ray machine started to sweat and called security. They took the suitcase and my brother to a safer place inside the airport and asked him to open his suitcase. I don't need to tell you that both the woman and the security guard were very concerned with that. But after my brother showed what we had inside the container they started to laugh. I told him to shout BOOM just as he was opening the luggage. Of course he didn't do it; otherwise I could be writing this from some prison in Germany....

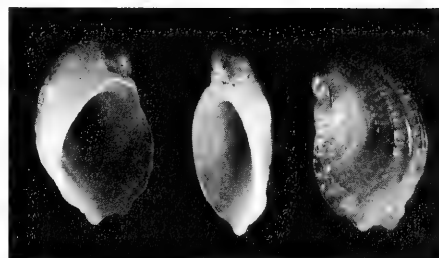
The American Museum of Natural History has published a dazzling 1997 calendar of seashells that will make a great gift for everyone. Don't forget your own copy. Photographed by Rosamund Purcell, it boasts an introduction by noted natural history writer Stephen Jay Gould. Just \$9.95.

The Houston Conchology Society has established the Dr. Harold W. Harry Memorial Award to support graduate research in malacology in Texas, offering a stipend of \$500.00. For further information contact HCS President Constance E. Boone, 3607 Rice Blvd. Houston, TX 77005 713-688-8252.

THE REDISCOVERY OF *CYCLOTHYCA CORRUGATA* STEARNS, 1890

by Emilio Garcia

Last summer I spent some time on the Pacific coast of Nicaragua doing some collecting. While there, I gathered on one of the beaches what appeared to be some interesting



"grunge," and brought it back to my hotel for further inspection. With just the use of a magnifying visor I separated out some 45 species of shells, so I decided to bring home with me much more grunge.

Well, as they say in Cuba, "One proposes and God disposes." When we got back to the area where I collected the first grunge, it was almost totally clean, due to some huge tides brought about by a hurricane that had just passed through Mexico. I did not want to go empty handed so, without much hope, I grabbed what little I could find and packed it to take home.

Four months later, as I finally found time to start identifying the Nicaragua material, I ran across a 5.7 mm specimen belonging to the *Cyclothyca*, a small genus of inconspicuous shells unfamiliar to most collectors. I recognized it right away only because some years ago Bob Pace, the well-known Florida collector, had given me some specimens of *Cyclothyca pacei*.

When I went to A. Myra Keen's *Seashells of Tropical West America* for help, I found out that what I had was *Cyclothyca corrugata* Stearns, 1990; that it was the only species of that genus found in that province; and that, as far as the author was concerned, it had not been collected since the original specimen was described from a 4.5 mm shell in 1890. Dr. Keen suggests that the shell has a striking resemblance to the New Zealand genus *Zelippistes*, and that "there being no subsequent American record, one wonders if Stearns' material could have been incorrectly labeled with respect to locality." Although Keen placed *Cyclothyca* in the family Capulidae, later workers have placed it in the much more recent superfamily Pyramidelloidea, family Amathynidae.

One last interesting point is that the original specimen also came from Nicaragua!

115 Oak Crest Drive, Lafayette LA 70503 email: efg2112@usl.edu

Gloria Maris, publication of the Belgian Society for Conchology, has begun a series on the genus *Nerita*. Part 1, through *N. fulgurans*, appears in 34(5-6) 1995, authored by "Xenophora," the Society's study group. Write R. de Roover, Vorsterslaan 7, 2180 Ekeren-Donk, Belgium.

Interested in travelling to New Zealand? The 2nd National Shell Show of New Zealand will be held June 19-22 at Whangarei, NZ. Write Mrs. E.A.S. Crosby, 29 Bush Road, Kamo, Whangarei, New Zealand (09) 435-2555. Those interested in attending or exhibiting should write for information immediately.

BOOK REVIEWS

The Marine Mollusks of the Galapagos Islands: a documented faunal list by Yves Finet Geneva, 1994. 180 pp. Softcover, 8.25" x 11.25". \$24 U.S. *Marine Molluscs of the Galapagos No. 1 Gastropods: A monograph and revision of the families Haliotidae, Scissurellidae, Fissurellidae and Lottiidae* by Yves Finet. Ancona, Italy, 1994. 110 pp., 10 text figs., 26 color plates. Hardbound, 8.25" x 11.75". About \$45 U.S. *Marine Molluscs of the Galapagos No. 2 Gastropods: A monograph and revision of the families Trochidae, Skeneidae, Turbinidae and Neritidae* by Yves Finet. Ancona, Italy, 1995. 139 pp., 10 text figs., 27 color and 10 b/w plates. Hardbound, 8.25" x 11.75". About \$70 U.S.

Yves Finet's trio of books are best considered as a unit, the opening works of a series of monographs and revisions he plans for the marine mollusks of the Galapagos, a study which he says represents "much of my life's story and project." Finet is Research Officer and Curator of Mollusks at the Museum of Natural History in Geneva (Switzerland) and Scientific Associate at the Royal Institute of Natural Sciences of Belgium in Brussels. The project, to which he is devoting so much of himself and of the resources of his institution and those of his contributors, was first outlined and undertaken by Leo G. Hertlein, before his death in 1972 to "grant marine mollusks the place they deserve in the existing knowledge of the biological environment of the Archipelago."

The softbound *Marine Mollusks of the Galapagos Islands: a documented faunal list* (an updated version of earlier lists, 1985 and 1991, now partly obsolete) must be considered first: it delineates the framework and establishes the validity of the fauna to be reviewed in subsequent revisions. No study of molluscan fauna of the Galapagos should be done without reference to this work. It documents 718 species (655 of them from shallow water) through the literature, museum specimens and private collections, with attention to references in old literature; another 228 species are considered doubtful or spurious. Finet says he will try to keep this list updated until a revision is necessary.

An interesting aspect of this list is its comment upon the vaunted molluscan endemism of these isolated islands. According to the data from Keen (1971) endemic species account for an amazing 42%; however, Finet's current list drops this number to 20%, indeed only 16% when shallow water species alone are considered. The list, with its references, makes up the bulk of the volume. Fourteen pages of references and an index conclude the book.

The second and third books contain monographs and revisions of the first eight families of the Recent Archaeogastropoda, four to a volume. In style they are a compromise, Finet says, between "the seriousness and sternness of a scientific revision" and the attractive look of a colorful popular book. Indeed it is one "popular" aspect of these works that strikes the collector first: their photographs! This reviewer has always maintained that, when studying or identifying a species, there is no substitute for actually holding the shell in question in one's own hand, weighing it, appreciating the texture and color and the light striking its curves and planes. Finet's magnificent camerawork and the superb printing have very nearly negated this view. The color photographs are so clear and the magnification is so suitable to each shell being depicted that it's as if the actual shell lay there on the page, and one had but to lift it into one's hand and turn it this way

and that. He has set a new standard in shell illustration. Quarter-inch emarginulas reveal all their secrets, as do 1.7mm *Eulithidium diantha* (McLean, 1970) Even the SEM photos of radulas are brighter, clearer than the usual.

Six hauntingly beautiful views of various Galapagan shore habitats join them. Unfortunately, these same views are repeated in both volumes, as is the Galapagos map and the introduction. But monographs are not usually sold as a set, so this repetition will be useful for perusers of a single volume. And Finet says this is likely to change in subsequent monographs.

Following this short introduction (with charts) describing natural influences on Galapagan molluscan life, the revision of the species begins. A full treatment is given each species, including citations and synonymy, type material and locality, original description in the original language and in English if necessary, and distribution and material examined. After each family treatment is an identification key to that family, and then the plates corresponding to that family.

Granted, these scholarly but very friendly works are expensive, and the pricing trend seems to be upward. But they are produced with excellent workmanship and popular appeal, and so they are expensive to publish. They are not likely to be big sellers, individually, because of the narrowness of scope of each volume. Also they are being funded by the Geneva Museum and private donors. So the buyer must expect to pay premium prices and support his share of the expense. But any collector who makes this investment will be lastingly pleased with the quality of the product, as well as the scholarship. We can't wait to see the next monograph. There is no word on the topic. Yves Finet has indicated that taxonomic order will not necessarily be his guide. —LS

Seashells of Eastern Arabia by Donald T. Bosch, S. Peter Dance, Robert G. Moolenbeek and P. Graham Oliver. Edited by S. Peter Dance. Motivate Publishing, Dubai, U.A.E. 9.5" X 12.5" Hardbound. 296 pages. Many color and b/w photos, drawings, diagrams. map. \$85 U.S.

Eagerly awaited by collectors worldwide, this lavishly and lovingly illustrated new regional guide, *Seashells of Eastern Arabia*, created by a quartet of highly respected workers in conchology and malacology, is a joy to behold. The bright white cover and jacket are bedecked with familiar shells of the region — *Lambis truncata sebae*, *Haliotis mariae*, the immensely variable *Umbonium vestiarium* and *Chlamys noduliferus* (oddly, a species not illustrated in the book and only briefly touched upon in the text) — while the back cover carries that lovely eastern Arabian classic, *Acteon eloiseae*, named for the senior author's wife, and locally known as "The Eloise."

Between these covers, photos and illustrations eagerly spill over themselves in a successful bid to show the glories of the region's malacofauna. Well over 1,000 of them are in color, from full page glamour shots for large species to postage-stamp size for the wee ones. And the photography and cropping are excellent, almost invariably showing important distinguishing characteristics of the species they depict. Multiple views of many species, live animals, habitat illustrations, drawings, SEM photos, and even pictures of the authors engaged in the research and development of the book are imaginatively arranged throughout the text. In fact, the varied and well-designed page layouts make merely leafing through it a pleasant adventure.

The book opens with a forward giving a bit of history of the project, and acknowledgements of patrons, including six Omani sheikhs and Petroleum Development Oman. A varied introductory section follows with the genesis of the book and its purpose — to address the needs of amateurs and professionals alike — a history of shell collecting and malacology in eastern Arabia, and factors influencing the fauna of the region. There follows a list of place names important in the text, useful because most of us are so unfamiliar with the geography. One wishes all names in the list were on the accompanying map.

The gastropod section of the treatment of species opens with the fine drawings of Mathilde Duffy, illustrating the parts of the gastropod shell, but with scant further introduction — not a book for the novice. Species treatments include description, distribution and habitat, where the words “beached” and “offshore” appear much too often for our satisfaction...much exploration of the fauna remains to be done by SCUBA, and it appears too little is really known about habitat for this book to be the final word. But considering this lack of information, an amazing number of species are treated — well over a thousand mollusks are known and included, many of them minute. There is no indication of rarity, and distribution outside the area is not mentioned. Nor is a size range indicated.

Other omissions appear on closer scrutiny. There is an introduction to the Archaeogastropoda, but the transition to the Caenogastropoda is not marked. Subclass Opisthobranchia is handled so similarly to the families and superfamilies that the reader must hunt this transition with diligence. And there is little in the way of comparison of similar species, or subspecies to species. Collectors would have appreciated seeing more opercs, particularly those of the Naticidae, and the trochids and turbos. McLean's work on the latter group also appears to have been ignored.

However, the authors have tackled a huge body of information; this was a massive undertaking, so some unevenness is to be expected. That full-page plate of lifesize *Festilyria festiva* variations is an incredible sight, forgiving much. And the 7-page introductory section on the Bivalvia more than makes up for any gastropod lapses. P. Graham Oliver, curator of mollusks at the National Museum of Wales, has done an extensive and fine introduction to this group of oft-slighted mollusks. Muscle scars, hinges and valve orientation are interestingly treated, and the shell shape and sculpture discussion and diagrams are helpful and enlightening. John Baxter did the text for the brief but good chiton section, and Scaphopoda and shelled Cephalopoda come in for more attention than usual. An excellent glossary, an extensive and valuable reference section and index conclude this bible of eastern Arabian mollusks.

All considered, this is an immensely valuable work. To a large extent it is groundbreaking work as well, and weaknesses are bound to exist. The authors are to be congratulated on a beautiful and amazingly complete work brought to fruition. This reviewer points to its lapses not to detract, but to encourage future work. *American Seashells*, even in its massive second edition, had many weak spots. But it was so full of strengths that it remains the American shell bible to this day. “Bosch, Dance, Moolenbeek and Oliver” is more of a mouthful than “Abbott,” but “Bosch *et al.*” will certainly be every bit as much of a classic. —LS

Coral Reef Animals of the Indo-Pacific: Animal life from Africa to Hawai'i exclusive of the vertebrates by Terrence M. Gosliner, David W. Behrens and Gary C. Williams. *Sea Challengers*, Monterey, California, 1996. 8"x10" format. Softcover. 320 pages, 1150 color photographs. \$45.00

If you love sea life in all its sci-fi shapes and technicolor glory, you'll want *Coral Reef Animals of the Tropical Indo-Pacific* under your tree this Christmas. And if the cold of December is getting you down, you'll feel cozy and relaxed just looking at the warm, sunlit scenes that abound among the superb underwater photos from reefs all over the tropical Indo-Pacific. The wealth of life in this region, estimated at five to ten times the marine species of the Caribbean, will keep you happily occupied as an armchair traveler, or until you can take that tropical Pacific dive trip you've dreamed of.

Covering sponges to shrimp, snails to sea squirts, this attractive, well-bound, durable field guide to the I-P's common reef invertebrates is strictly a scientific work, cooperatively authored by three experts in the field. Terrence Gosliner and Gary C. Williams are both curators of invertebrates at the California Academy of Sciences. Dr. Gosliner is an authority on opisthobranch mollusks who spoke before the 1995 COA convention in San Diego, and Dr. Williams is a specialist in octocorals. David W. Behrens, a Research Associate at the Academy, specializes in nudibranchs. Added to the formidable body of knowledge they represent is the expertise of many other authorities they have consulted. (See the Acknowledgements and the extensive list of References.) It is probably the most accurate field guide in the genre, considering its authors' combined expertise, and it provides coverage of ecological interrelationships, reproduction, diet, and behavior, as well as interspecific associations.

The photos, one for each of 1,150 species covered, are superb, showing in excellent clarity and color the characteristics important for the identification of the animals they picture. The photography of some 52 divers is represented here. Names of well known divers will be familiar to many of us, David Mulliner, Mike Severns and Bob Yin, among them.

The body of the book is devoted to the species. Each of the invertebrate groups covered opens with a general introduction to the biology, ecology, major divisions, and peculiarities and difficulties associated with that group. The photographs follow, alongside Individual Species Identifications, with attention to Identification, Natural History and Distribution.

While the Species Identifications are the most colorful and attractive section of the book, the Introduction is excellent too. A detailed discussion of coral reef communities and habitats, coral biology and formation and distribution of coral reefs bring Darwin up to date. There are also excellent sections on classification and taxonomy and on how to use the book.

A Glossary of perhaps-unfamiliar terminology — know coelom? chelipeda? — for groups we are less familiar with is very helpful, as is a list of Recent Geographic Name Changes: heard of Myanmar, Lakshadweep or Chuuk? — probably not. There is a quick-reference map to the Indo-Pacific islands and archipelagos, and inside the front cover is a quick-recognition picture index key to all major groups of animals included.

This guide does not pretend to be complete — when we realize that about 600 species of nudibranchs have been identified from a single bay in Papua New Guinea, we realize the utter impossibility of that task — but for the diver, the

BOOK REVIEWS (continued)

sheller, the biologist, the photographer or the aquarist, this book is a must-have for recognizing and appreciating the common species that inhabit the upper 50 feet of the Indo-Pacific coral reef communities. — LS

Idea to Reality, An Informal History of the Bailey-Matthews Shell Museum from Concept to Grand Opening by William F. Hallstead. Bailey-Matthews Shell Museum, Sanibel Island, Florida. Softbound, 6" X 9" format. 77 pages, color cover, 19 b/w illustrations. \$8.95

The Bailey-Matthews Shell Museum has just published *Idea to Reality*, an informal history of the museum project's first nine years, 1986 to November 1995's Grand Opening. The attractive little book is written by William F. Hallstead, a former president of the museum board and a trustee, and also a nationally recognized author of 17 novels and numerous short stories and articles. Bill, intimately involved with the project from the beginning, tells the story in first person, including anecdotes about the land acquisition, the controversial entrance bridge, the building design, and the inspirational work of its founding director, Dr. R. Tucker Abbott.

Following Hallstead's 41-page account are 6 pages of photos, and a listing of all trustees, charter members and contributors through the 9-year period. Concluding the book is the list of members of The Order of the Purple Pecten, Tucker Abbott's accolade for individuals who, in his opinion, provided extraordinary support. Production costs were underwritten by Barbara M. J. Wood in memory of her husband, J. Howard Wood. Proceeds from book sales benefit the museum.

If you were physically, financially or spiritually involved in this huge project, you're sure to find Bill's account a compelling one, and you'll probably find your own name in it somewhere.

MUREX UPDATE: ROLAND HOUART NAMES TWO NEW MURICID GENERA

by Gene Everson

The genus *Pteryarchia* Houart 1995 has been published in *Apex* 10(4): 127-136, 20 Dec. 1995 for the muricine species *tripterus* (Born, 1778); *aparrii* (D'Attilio & Bertsch, 1980); *barclayanus* (H. Adams, 1873); *bibbeyi* (Radwin & D'Attilio, 1976); *bipinnatus* (Reeve, 1845); *bouteti* Houart, 1990; and *martinetana* (Röding, 1798).

Most of these species were placed in the genus *Marchia* by Radwin and D'Attilio, 1976, but this name was not universally accepted. However, Emily Vokes agreed that this group had to be separated from the *Pterynotus**. *Pteryarchia* appears to be the ideal replacement name, combining *Pterynotus* and *Marchia* for the earlier attempt to separate these species from *Pterynotus*.

In the same *Apex* issue appears the new genus *Vaughtia* Houart, 1995 for the Ocenibrinae species *babingtoni* (Sowerby, 1892); *fenestrata* (Gould, 1869); *purpuroides* (Reeve, 1845); *scrobiculatus* (Dunker in Philippi, 1846); *dunkeri* (Krauss, 1848); and *jucundus* (Thiele, 1925). These are small shells, up to 17mm, and all from South Africa.

*The type species of *Marchia* was *Murex clavus* Kiener, 1843 (= *Murex elongatus* Lightfoot, 1786) which is a true species of *Pterynotus* and relegates *Marchia* to synonym status.

1997 WINTER & SPRING SHELL SHOWS & OTHER EVENTS

by Donald Dan, COA Award Chairman

- Jan. 18-19 **ASTRONAUT TRAIL SHELL SHOW**, Melbourne, FL
Jim & Bobbi Cordy, 385 Needle Blvd.
Merritt Is., FL 32953 (407) 452-5736
- Jan. 25-26 **GREATER MIAMI SHELL SHOW**, Miami, FL
Elizabeth Brown, 2920 Bird Ave., Apt. 7
Coconut Grove, FL 33133 (305) 461-5272
- Jan. 31 - **BROWARD SHELL SHOW**, Pompano Beach, FL
Feb. 2 Wayne M. Harland, 2549 SE 15th St.
Pompano Beach, FL 33062 (954) 942-3950
- Feb. 1 - 2 **IXieme RECONTRES INTERNATIONALES DU
COQUILLAGE**, Paris, France
Gilbert Jaux, 3 rue Saint-Honore
78000 Versailles, France (1) 39-53-80-46
- Feb. 14-16 **SARASOTA SHELL SHOW**, Sarasota, FL
Peggy Williams, P.O. Box 575
Tallest, FL 34270 (941) 355-2291
- Feb. 21-23 **NAPLES SHELL SHOW**, Naples, FL
Howard & Susan Roux, 152 Coral Vine Drive
Naples, FL 34110 (941) 514-0541
- Feb. 22-23 **1st NATIONAL SHELL SHOW**, Adelaide, Australia
Barbara Rowsell, c/o Marine Invertebrates
S. Australian Museum, North Terrace
Adelaide, S.A. 5000, Australia (8) 264-7008
- Feb. 28 - **S.W. FLORIDA CONCHOLOGICAL SOCIETY
Mar.2 SHELL SHOW**, Ft. Myers Beach, FL
Edie Chippeaux, 1308 Biltmore Drive
Ft. Myers Beach, FL 33901-8710 (941) 936-4058
- Feb. 28 - **ST. PETERSBERG SHELL SHOW**, Treasure Is., FL
Mar. 2 Bob & Betty Lipe, 440 75th Avenue
St. Petersburg Beach, FL 33706 (813) 360-0586
- Mar. 6 - 9 **SANIBEL SHELL SHOW**, Sanibel, FL
Vi & Jon Greenlaw, 2813 SW 43rd Lane,
Cape Coral, FL 33914 (941) 542-0935
- Mar. 13-15 **MARCO ISLAND SHELL CLUB SHOW XVII**,
Marco Is., FL
John Maerker, 365 Henderson Court
Marco Island, FL 33937 (941) 394-3438
- Apr. 20 **PACIFIC SHELL CLUB SHOW**, San Pedro, CA
Frank Jewett, 1739 Vallecito Drive
San Pedro, CA 90732 (310) 519-8889
- May 3 - 4 **VII BELGIUM INTERNATIONAL SHELL SHOW**,
Aarschot, Belgium
R. De Roover, Vorsterslaan 7
2180 Ekeren-Donk, Belgium (3) 644-3429
- Jun. 14-15 **XVlieme SALON INTERNATIONAL DU COQUILLAGE**,
Lutry, Switzerland
Dr. Ted W. Baer, CH-1602 La Croix
Switzerland (21) 791-3771; FAX 792-1411
- Jun. 22-16 **JOINT ANNUAL MEETING OF THE AMERICAN
MALACOLOGICAL UNION & THE WESTERN
SOCIETY OF MALACOLOGISTS**, Santa Barbara, CA
Hank Chaney, Santa Barbara Museum of Natural History
1559 Puesta del Sol Road
Santa Barbara, CA 93105 (805) 682-4711 Ext. 334

2620 Lou Anne Court W. Friendship, MD 21794, U.S.A. Tel. (410) 442-1242
or 442-1942 Email: DonalDan@AOL.Com

SNAIL SAFARI TO KENYA AND TANZANIA

by Neil E. Fahy

Most people's image of an African safari is tall Masai warriors guarding cattle from lions; herds of grazing zebra, gazelle and impala; and the lion and cheetah lurking in tall grass, stalking prey. I personally include snails scraping their living from rocks and foliage and carnivorous snails and slugs ready to pounce upon them. This was my expectation for my 17-day African snail safari, starting in Nairobi and ending in Mombasa.

It was my second trip to Africa. In 1994, on a 17-day trip to South Africa and Victoria Falls, we spent four days at Kruger National Park where we saw a variety of animals but not many individuals. This trip was to be very different— we were going to Kenya and Tanzania where we would see variety and many individuals.

March 10 - Sunday

During the layover day in London, I met our old garden "friend," *Helix aspersa*, a Mediterranean species introduced throughout the world, including England. The English introduction, however, was by the Romans!

March 11 - Monday

We started our adventure in Nairobi, the largest city in East Africa with a million people. With only seven of us in our pop-top van, we each had an unlimited window view as we headed south over flat limestone country and through the little community of Kajai. Buildings along the way were mud or stone blocks — nothing made of lumber.

This is Masai country. Masai are nomadic cattle herders who ring their small temporary villages with thorn Acacia tree branches to keep out animal intruders. Their huts are constructed of branches covered with dirt mixed with cow dung. When cattle eat all the surrounding grass, they abandon and burn the village — the burning helps grass grow rather than brush. The people wear brightly-colored full-length clothes. The men attending the cattle stand tall, carrying a 9' spear at their sides.

The flat terrain now changed to rolling hills and in the distance was the broad plain at the foot of Mt. Kilimanjaro. At Mamanca, just north of the Tanzania border, we turned east on a dirt road to Amboseli National Park. The 19,341' summit of Kilimanjaro was clearing and its glacier-covered flat top was visible. It is a broad volcanic cone with just a few parasitic cones. The underlying limestone is now covered by lava. The

great plain is home to many animals, wildebeest, Thompson's gazelle, zebra, cape buffalo, elephant, jackal and birds.

March 12 - Tuesday

It started pouring about 4 a.m. Got up at 6 when it began to ease up. Put on a raincoat and walked to the lodge entrance. The summit of Mt. Kilimanjaro was clear, but the base was in clouds. Found live specimens of urocyclid slugs, *Trochonanina*, and *Limicolaria dimidiata*. Some members of the Urocyclidae have become slugs; *Trochonanina* also an urocyclid, has a tightly-coiled, depressed, keeled shell. *Limicolaria* is an Achatinidae with a pattern of radial flames but without a truncated columella.

Drove to the border town of Namanora and crossed to Tanzania. Our Kenya driver and car are not allowed in Tanzania, so our luggage was transferred to an identical van from Tanzania and we headed south with our new driver. There were visible changes. The Masai are not the dominant people here and wood construction is everywhere. There are forests nearby. Continued south to Arusha where we had lunch.

We now headed west on a very bumpy dirt road, arriving at Ngorongoro Crater at 8 p.m. It was a long, bouncy but interesting day. Saw the Great African Rift — the Rift escarpment is quite evident as a 2,000' cliff.

March 13 - Wednesday

The Ngorongoro caldera is seven miles across and 2,000 - 2,500' deep, with a couple of lakes and swamps on its bottom. Went snailing along the road by the parking lot. Collected many *Cerastua* and *Subulona nitidus* but all were empty shells. *Cerastua* has a bulimoid shell with a reflexed lip. *Subulona nitidus*, a member of the Subulinidae, resembles a large *Subulina* species. After breakfast, boarded a 4-wheel pop-top vehicle and headed for the bottom of the caldera. There were now four to a van plus driver and guide so everybody had a window. The road is dirt but well-maintained and not steep. The first part is through the Lerai Forest of umbrella trees (Acacia). Would like to explore the forest for snails but it is off-limits because of lions, leopards and cheetahs. It is their habitat and is not fenced. Didn't want to be a snailer eaten by the wildlife.

(continued)



Limicolaria dimidiata at 30mm at 30mm is much smaller than 56mm *L. saturata*. Its flame pattern is shorter than the whorl height. Kenya: Amboseli

Limicolaria saturata resembles a non-truncated *Achatina*. Kenya: Nairobi



Cerastua sp. has a 28mm shell with a reflexed lip. Tanzania: Ngorongoro.



Subulona nitidus with a length of 35-40mm resembles a giant *Subulina*. Tanzania: Ngorongoro.

SNAIL SAFARI TO KENYA AND TANZANIA (continued)

The flat floor of the caldera was covered with green grass — this was the rainy season. On a slope was a herd of zebra and wildebeest, about 3,000 individuals. We drove over the plain until noon when we picnicked by a small lake. Saw a pride of lions resting on a rocky outcrop. Also saw bat-eared fox, zebra, warthog, gazelle, hippo, elephant, waterbuck and eland. The birds were wagtail, plover, kori bustard which eats snakes, flamingo, vultures and so forth — a delightful day with temperature in the 70's.

March 14 - Thursday

After putting out my bags this morning, I went to yesterday's collecting site and found five thick white urocyclid slugs about 5-6" long.

We left the park by circling clockwise on the crater rim road. Passed the park headquarters and headed down the western crater slope. The land had small trees and shrubs on the slopes and grassland on the level regions. At Olduvai Gorge where the Leakeys made their prehistoric discoveries, we heard a lecture explaining the archaeological sites. There are five geologic formations, but the human fossils are found in layers 1, 2 and 4. When I asked about snails I was told that some with broken apertures were found in the formations.

Drove across flat land to the Serengeti National Park boundary at Naabi Hill. Found a few shells here of *Limicolaria* and *Trochonanina*. We then proceeded to the Serengeti Sofa Lodge, located on a cliff top with a beautiful view of the Serengeti Plain. After lunch we went for a game drive. The highlight was a leopard lying on a tree branch a couple of hundred yards away with a dead gazelle next to him. Besides the leopard, we saw baboon, giraffe, impala, black-faced vervet monkey, vulture and the eagle-like bateleur. Collected a live *Trochonanina* on the dirt across the road from the lodge reception area.

March 15 - Friday

A fabulous day! Left at 8:30 for a game drive. Went to the granite outcrops called Simba Kopjes. The name "simba" means "lion," and "kopjes" are "small heads in a sea of grass." The hills rise 50-100' above the flat plain. Sunning themselves on the rocks were a pride of lions. According to our guide, the cubs had been born in November. There were also several females and a male. The cubs were very playful, jumping on

each other and rolling around. They would run toward their mother and leap into the air, hit her on the flank, then bounce to the ground. Leaving there we saw more lions in the tall grass.

A short drive took us to three hyenas next to a small pond. Very powerfully-built, stocky animals standing about 3' high at the shoulder, they are not the fastest runners, but have the greatest endurance of any predator, and can take killed animals away from cheetahs.

We then headed south to the Serengeti Plains. The region was a sea of green grass as far as the eye can see. Zebra and wildebeest became more abundant, and the grass became shorter. We found ourselves within a herd of 800,000 zebra and 1,600,000 wildebeest — animals as far as we could see — absolutely incredible! The reason for this abundance is that this is Masai territory: the Masai live on the blood and milk of their cattle, and do not kill animals for meat. They take the blood from living cattle, like going to the blood bank. Consequently they live in harmony with the native grazers, using their spears only to ward

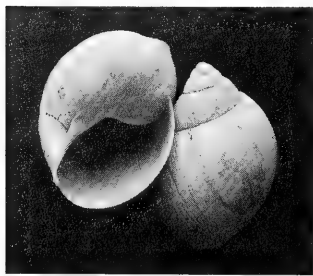
off or kill predators threatening their cattle. Farther along we found a zebra kill with the lion nearby. Also saw some vultures cleaning up a zebra carcass.

The final spectacular was a cheetah lying in the grass. It sat up straight and looked at us — remarkable! They are majestic animals. Here, animals have no fear of people — why should they? When we returned to the lodge one of the guides gave me two 82.5 mm *Burtoa nilotica* shells he picked up at Simba Kopjes! They are large, plump Achatinidae without flames and without a truncated columella.

After lunch we went out at 4 p.m. and drove to the slightly salty Lake Magadi. On the shore in the grass, two male lions and a female, walked toward the lake, to be joined by another male and two more females. A female snorted and the males replied. Saw many lion tracks in the mud by the lake. The Serengeti is the ultimate in the quantity of mammal — migrating animals are everywhere — you are literally in a sea of animals.

March 16 — Saturday

Left the Serengeti Sofa Lodge at 8 a.m. As the overcast day progressed it changed to scattered clouds. We drove past Simba Kopjes to the Naadi Hill exit and re-entered the Ngorongoro Conservation Area. Along the way we saw some bat-eared fox, topi, wildebeest, zebra and giraffe.

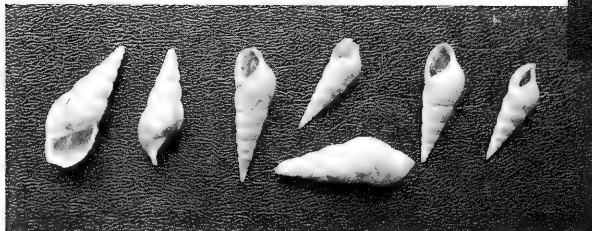


Burtoa nilotica giraudi is a fat Achatinidae but the columella is not truncated. Tanzania: Serengeti.



Achatina cf. glaucina is reported from Malawi but not yet (1983) from Kenya. Kenya: Aberdare.

Achatina sp. has a thin shell, 53X 36mm. Tanzania: Lake Manyara.



Melanoides tuberculata is a widespread Thiaridae freshwater snail. Kenya: Samburu.

This *Trochonanina* sp. Has a rounded periphery and a spiral band. Kenya: Samburu.



If we paid \$10 each we could visit the Masai village of Olokingu, near Olduvai Gorge, and take pictures. We were greeted by children, adults and the chief. The Masai in their red costumes did a dance with lots of vertical jumping and no musical accompaniment but clapping. Then they showed us around the village which consisted of about 50 adults and lots of children, an outer spiny-shrub fence, small shelters, and a corral for cattle in the center. Keeping the cattle within the enclosure resulted in animal droppings everywhere — the ground within the village was compacted dung and the faces of the children were covered with flies. Bought a Masai spear and a bead necklace. The spear came in three sections which allowed me to put it in my suitcase.

We continued to the Ngorongoro Crater rim and then down to Karatu where we had lunch at the Gibbs Farm, a coffee plantation — very nice. Finally arrived at Lake Manyara Lodge, situated on the edge of the Great Rift overlooking Lake Manyara. It was a pretty setting.

At 4:30 went for a game drive to Lake Manyara National Park at the base of the escarpment. The unpaved roads in Tanzania, if they can be called roads, are really wide trails with potholes and 2' ruts — this road was no exception. At the lake saw hippos, giraffe, lion and more. Returned up the escarpment road to the lodge at 7 p.m.

March 17 - Sunday

We left at 8:30 for Nairobi. Before breakfast I walked along the trail on the edge of the escarpment. In a grassland area I found three live *Achatina*, and two dead *Burtoa nilotica*,



A live *Achatina* sp. from the Lake Manyara area, Tanzania.



Africarion is on the road to slugdom. The animal is too large to fit in the shell. Kenya: Masai Mara

27.4 and 50.4 mm. Lunch in Arusha, then on to Nairobi, arriving at 6:30.

March 18 - Monday

We left Nairobi at 9:30 for the three-hour ride to Aberdare National Park. As we left Nairobi the land was flat and cultivated, but during the last half hour we climbed into a forest. Mountain Lodge Treetop Hotel, at 7,500', is built above a small pond and salt lick; rooms have private balconies overlooking the pond, which is lighted at night. Cape buffalo and waterbuck at the pond; a group of giant forest hogs dropped by for a while — two females and about six nursing young. We were not allowed to walk beyond the parking lot gate, and even the path to the parking lot was tightly fenced.

Walked along the fenced path and found some snails including *Limicolaria*, *Subulona*, *Africarion* and *Trochonanina*.

(continued)



A 108mm white slug. Tanzania: Ngorongoro

All photos by the author.



This *Achatina* shell partly dissolved in alcohol! Was the dissolving agent produced by the reaction of the animal to the solution? Kenya: Nairobi.

SNAIL SAFARI TO KENYA AND TANZANIA (continued)

Africarion, also a urocyclid, has a fragile shell, inadequate to contain the entire animal — it is well on the road to slugdom. The porters at the parking lot asked what I was doing, and when I told them they helped me collect. One porter found a live *Achatina cf. glaucina* in its greenish shell.

March 19 - Tuesday

When I went snailing this morning, a porter brought me a "live" specimen — he had found a live urocyclid slug and put it inside a broken *Limicolaria* shell so I would think it was a snail. This was probably because I hadn't said that I was interested in slugs as well. We left Treetop at 8:30 and drove north three hours to Nanyuki, on the equator. Walked across the equator several times: in the future when I'm asked if I've crossed the equator, I can honestly say, "Many times."

Another hour to the Sarova Shaba Hotel in the Samburu Nature Reserve. While Treetop was at 7,500', Samburu is at 2,500' and hot. The country is still in the Rift Valley. Mt. Kenya is the volcano delimiting the rift's eastern edge. This area is flat and dry with scattered umbrella trees. The Sarova Shaba Hotel is beautiful, strung out along the bank of the Uaso Nyivo River. Rooms have a large screened sliding window on either side, a ceiling fan, and roll-around white lace netting on the bed. We arrived in time for lunch, which is always nice.

At 3:30 we went for a game drive. Saw Beisa oryx, elephant, reticulated giraffe, Grevy's zebra, Burchell's zebra, ground squirrel, wart hog, dik-dik and gerenuk; the latter stands on its hind legs to reach leaves in the trees.

Returned to Samburu about 6 p.m., went to see the native dancers at 7 and at 7:30 to a crocodile feeding. No crocs showed up. Did see some 4' monitor lizards. We had dinner at 7:45 and everyone showed up.

March 20 - Wednesday

It rained heavily during the night. The Uaso Nyiva River was flooding its banks and was chocolate brown — truly too

thick to drink and too thin to plow. I have never seen such sediment-laden water, even in Malaysia. It looked like you could walk on it.

Went for a game drive at 9:30 but didn't see much — stork, impala, three cheetah lying under a tree, kudu, gerenuk and birds. Even with all the rain, the ground was very dry.

After lunch went for a snail walk. Found *Trochonanina* with double spiral bands. Along a garden canal was the freshwater *Melanoides* with its turreted shell, the planorbis shells of *Bromphalaria pfeifferi*, and *Quickia* — all empty shells. The 3:30 game drive was pretty skimpy. At crocodile feeding time five showed up. They got bones with very little meat. It is still very hot.

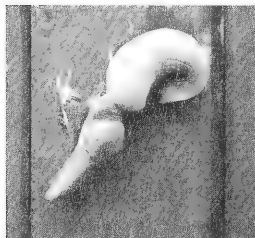
March 21 - Thursday

We left at 9 a.m. It is really hot today — will surely be in the high 90's by noon. Arrived at Mt. Kenya Safari Club about noon. It is pleasant here at 7,000'. The Club is quite a way downslope on the mountain. Mt. Kenya, 17,057', was visible at first, but disappeared in clouds as we approached.

The Club was built by William Holden and friends. Veryluxurious (in its day), it is my least favorite lodge so far on the safari. Supposedly a first rate hotel, its locks didn't work, the buildings needed maintenance, and I didn't travel all the way to central Africa to stay in a piece of transplanted southern California, with golf course, eucalyptus, pines and ivy. Other lodges are environmentally compatible. Did find a few snails.

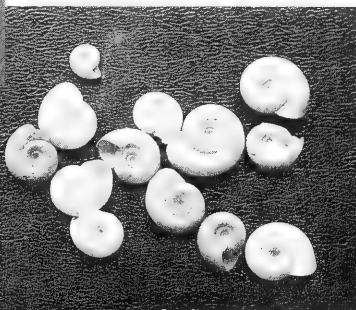
March 22 - Friday

We left at 9 a.m. and drove to a small airport south of Nanyuki for our 55-minute flight to Masi Mara in a 1945-model plane, a smooth flight over cultivated fields and forests. Mt. Kenya was in the clouds. Located along the bank of the Mara River, the Mara Safari Club is beautiful, and we have deluxe tent cabins. The tent is divided into two sections — the front, with wooden floor, is for sleeping, and the back, with stone

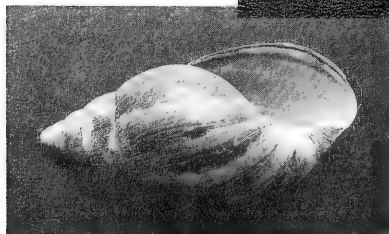


Two slugs head to head. The Urocyclidae is a transitional family, having both shelled and slug members. The slugs have the mantle in the anterior half of the foot and the breathing pore in the posterior half of the mantle. A caudal pore is present but there is no keel. Kenya: Masai Mara.

Biomphalaria pfeifferi is a planorbis freshwater snail. Kenya: Samburu.

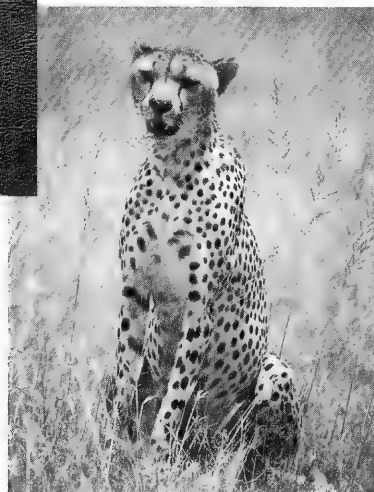


This *Trochonanina* sp. has an angular periphery and no color band. Kenya: Nairobi



Achatina sp. has a thin shell 81 x 42mm. Kenya: Nairobi.

Cheetah. Tanzania: Serengeti.



Hippo opens wide for his dental check-up. Tanzania - Lake Manyara.



Lion. Kenya: Masai Mara.



Masai. Kenya: Masai Mara.



Lion treed by waiting buffalo. Kenya: Masai Mara.

floor, is the bathroom, with shower stall, wash basin and toilet. The most elegant tent camping I have seen.

After lunch, at 3:30, went on a game drive. The Masi Mara is quite different from the Serengeti, even though it is its northern extension. The land is rolling hills without umbrella trees. Has ditca shrub and geranium trees. Saw hippo in the river at the lodge, also baboon, impala, zebra, warhog, topi, lion and cheetah in the grassland. The game drive ended with a sundowner picnic that was very nice — we had snacks and drinks while watching the sun set across the Masi Mara, in company of armed guards in case predators came to join the picnic.

March 23 - Saturday

It was noisy last night — the hippos below my tent in the river were calling most of the night. It was now 5 a.m. and I was getting ready for a hot air balloon ride over the Masi Mara. At the take-off site at 6 a.m. we found the balloons spread out on the ground with a fan placed near the open end to inflate them. Above the basket was a four-burner flame. If you had any physical impediment you could enter the basket while it was on its side; otherwise you climbed the foot holes up the side and lowered yourself into the basket. The basket was divided into three compartments — two for passengers and one for the pilot.

When a balloon was fully inflated by the fan, the hot air flame was ignited and the balloon rose, with six of us inside, and drifted across the landscape, over some animals and several Masai villages. We landed on the plain after an hour's flight. Our basket rolled over so we had to crawl out. The basket was very well padded, for just such circumstances, but then so was I.

The ground crew had set up a picnic breakfast on the savannah, and the Masai from a nearby village came and sat in a large circle surrounding us. They had souvenirs and I bought a few. Took many portrait pictures — a great photo opportunity.

When young Masai women came to the circle, they bent before two older women who touched their heads. I was told that Masai only shake hands with members of their own age group. In other encounters, the older person touches the younger.

At 3:30 we went on a game drive and saw white rhino, lion and cubs, elephant, cheetah and more.

March 24 - Sunday

At 6:30 a.m. went on our last game drive. It was cool this morning. We saw cheetah and then lions. Drove to the crest of

a small swell — there below us was a herd of 40 buffalo with several young. Our guide stopped the van and told us to "watch this." To the left of the buffalo in the tall grass three lionesses stalked the herd, separating to position themselves for a kill. The buffalo seemed to be unaware of their presence. Suddenly, without any signal we could detect, the 40 buffalo charged the lions. Buffalo are large but they are also fast! They can outrun a lion! Seeing a tidal wave of buffalo charging at them, the lions turned tail. Knowing the buffalo could catch them, two of the lions climbed to safety in trees and the third found a large shrub. The buffalo butted the tree trunks, trying to knock the lions from their safe perches. The lions snarled at the buffalo, but the buffalo knew that they had the lions treed and were not to be intimidated.

While this activity was in progress, a male lion appeared about a hundred years from the fray. We thought of King Arthur and his Knights of the Round Table — surely he would rescue the fair damsels. But no. He watched for a few minutes, decided it was not his problem, turned and walked away. Gradually the buffalo moved away, casually eating the tall grass as they went. Then when the coast was clear, the lionesses descended and walked off. They had been treed for about an hour and a half — interesting to see the "king of beasts" treed by its prey. Because of its unpredictable behavior, the buffalo is considered by the guides to be the most dangerous animal in Africa.

In the afternoon we flew back to Nairobi. Our hotel was across the street from the University of Nairobi. On the grounds of the university I collected *Achatina*, *Africarion*, *Trochonanina* and *Limicolaria*.

March 25 - Monday

Took the 2:15 flight and discovered it was hot and humid in Mombasa. Went snailing near the ship dock and collected *Trochonanina* and what looks like an *Enidae*.

Friendly, courteous people, especially the Masai, excellent weather, abundant animal life and the African Rift made this trip memorable. But the truly new experience for me was being in a hostile environment. Our living enclosures were bounded by electric fences. There were signs warning about predators and about crocodiles near the river. During the game drives we were restricted to our pop top vans — no leaving the vehicle. Central Africa is the only place I have been where I was the protected species. It was dangerous, life-threatening, to venture into the "real" world! It was a great trip!

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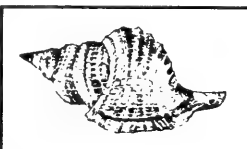
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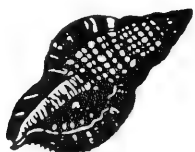
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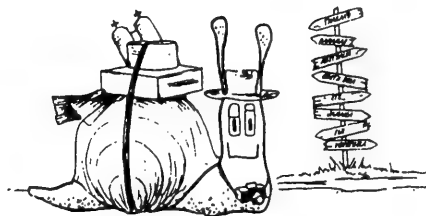
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